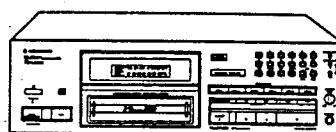


Service Manual

PIONEER
The Art of Entertainment



ORDER NO.
ARP2461

MULTI-PLAY COMPACT DISC PLAYER

PD-M701

PD-M701 HAS THE FOLLOWING :

Type	Power Requirement	Remarks
KU	AC120V only	
KC	AC120V only	
WEM	AC220-240V	
WB	AC220-240V	

- This manual is applicable to PD-M701/KU, KC, WEM and WB.
- For KC, WEM and WB types, refer to page 61.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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ISO MAR. 1992 Printed in Japan

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

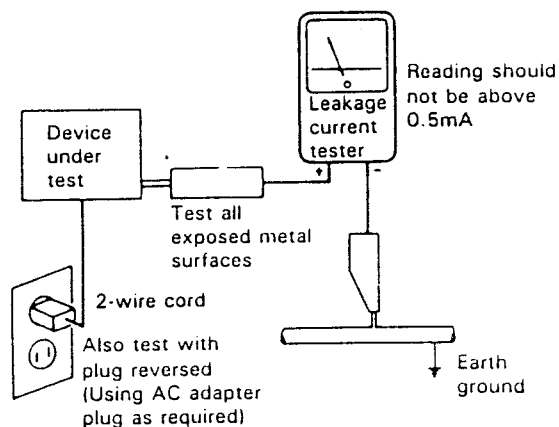
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING
NÅR SIKKERHEDSAFBRYDERE ER UDE AF
FUNKTION UNDGA UDSÆTTELSE FOR
STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA
DEL ÄR ÖPPNAD OCH SPÄRREN
ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN.



LASER
Kuva 1
Lasersäteilyn
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH
EMITS INVISIBLE INFRARED RADIATION
WHICH IS DANGEROUS TO EYES. THERE IS
A WARNING SIGN ACCORDING TO PICTURE
1 INSIDE THE DEVICE CLOSE TO THE LASER
DIODE.



LASER
Picture 1
Warning sign for
laser radiation

IMPORTANT

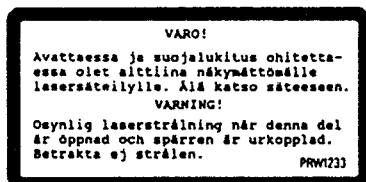
THIS PIONEER APPARATUS CONTAINS
LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS
SHOULD BE DONE BY A SPECIALLY
INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

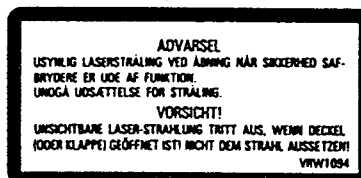
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

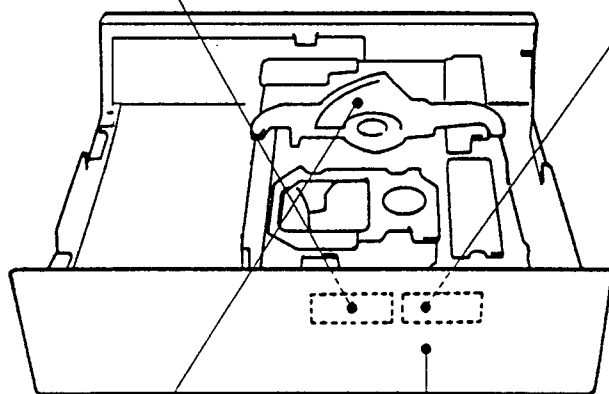
WEM type



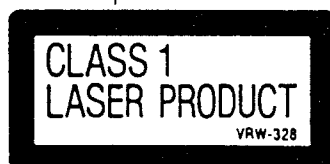
WEM type



WB type



WEM and
WB types



WEM and WB types

Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level) (clamped state).

Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.

The interlock also does not operate in the test mode *.

Laser diode oscillation will continue, if pins 1 and 2 of M51593FP (IC101) on the preamplifier board loaded on pick up assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

'92M1

* : Refer to page 26.

2. EXPLODED VIEWS AND PARTS LIST

2.1 EXTERIOR

NOTES:

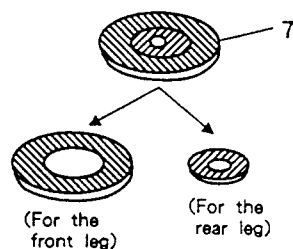
- The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
Δ	1	Strain relief	CM-22		101	PCB mould	AMR1525
	2	32P F.F.C /30V	PDD1120		102	Under base	PNA1800
Δ	3	Power transformer	PTT1235		103	Rear base	PNA1801
Δ	4	AC power cord	RDG1010		104	Multi mechanism assembly	PXA1429
	5	Bonnet	PYY1168		105	Function panel	PNW2165
	6	Insulator	VNK1095		106	Name plate	PAM1407
	7	Stopper	PNM1070		107	Function board assembly	PWZ2303
	8	Headphone knob	PAC1600		108	Power SW board assembly	PWZ2398
	9	Track button	PAC1667		109	Headphone board assembly	PWZ2311
	10	Operation button	PAC1668		110	Parallel wire (6P)	D20PYY0610E
	11	Power button	PAC1669		111	Earth lead unit	XDF-502
	12	Display window	PAM1572				
	13	Spring(Door)	PBH1022				
	14	LED lens	PNW2019				
	15	Door	PNW2138				
	16	Sensor acrylic	VNK1566				
	17	Function panel assembly	PEA1227				
⊙	18	Mother board assembly	PWM1588				
	19	Screw	BBZ30P060FMC				
	20	Screw	BBZ30P080FZK				
	21	Screw	BBZ30P100FZK				
	22	Screw	FBT40P080FZK				
	23	Screw	IBZ30P060FCC				
	24	Screw	IBZ30P100FCC				
	25	Screw	IBZ30P180FMC				
	26	Screw	PDZ30P050FMC				
	27	Screw	IBZ30P080FCC				
	28	Screw	BBZ30P080FCC				

* The stopper consist of the big ring part and the small ring part.

If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



A

B

C

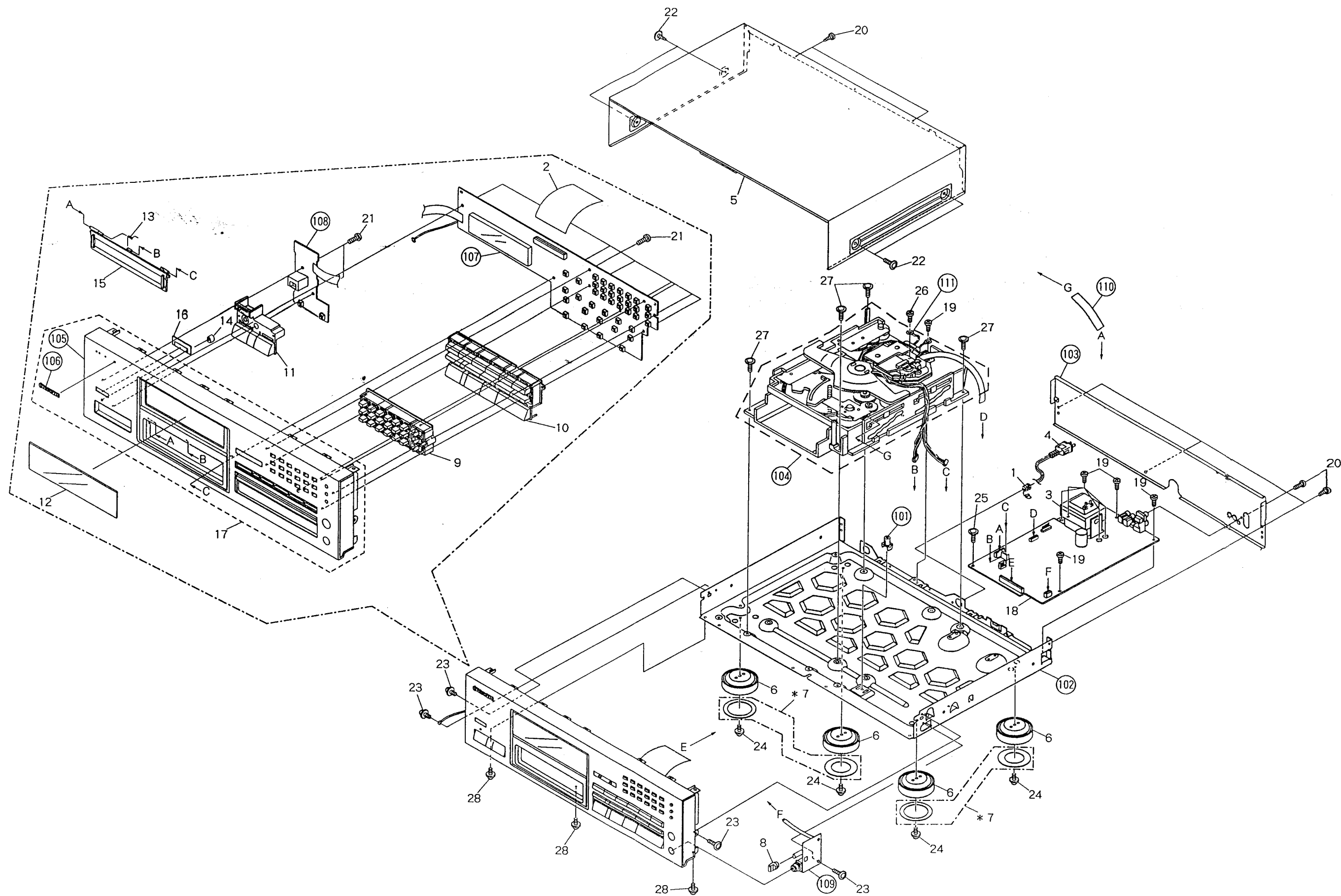
D

A

B

C

D



1

2

3

4

5

6

6

2.2 MULTI MECHANISM ASSEMBLY

*1: Fix the motor (101) on the loading board assembly (105) so that the label attached on the motor faces the direction illustrated.

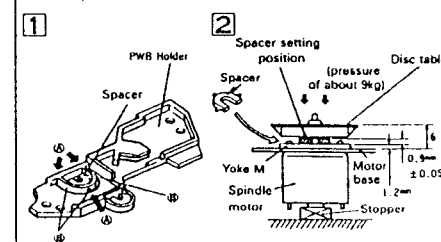
*1 Label

*2: Fix the motor (101) on the motor board assembly (110) so that the label attached on the motor faces the direction illustrated.

*2 Label

• How to install the disc table

- 1 Use nippers or other tool to cut the three sections marked (A) and the three sections marked (B) in figure. Then remove the spacer.
- 2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Detach the spacer.



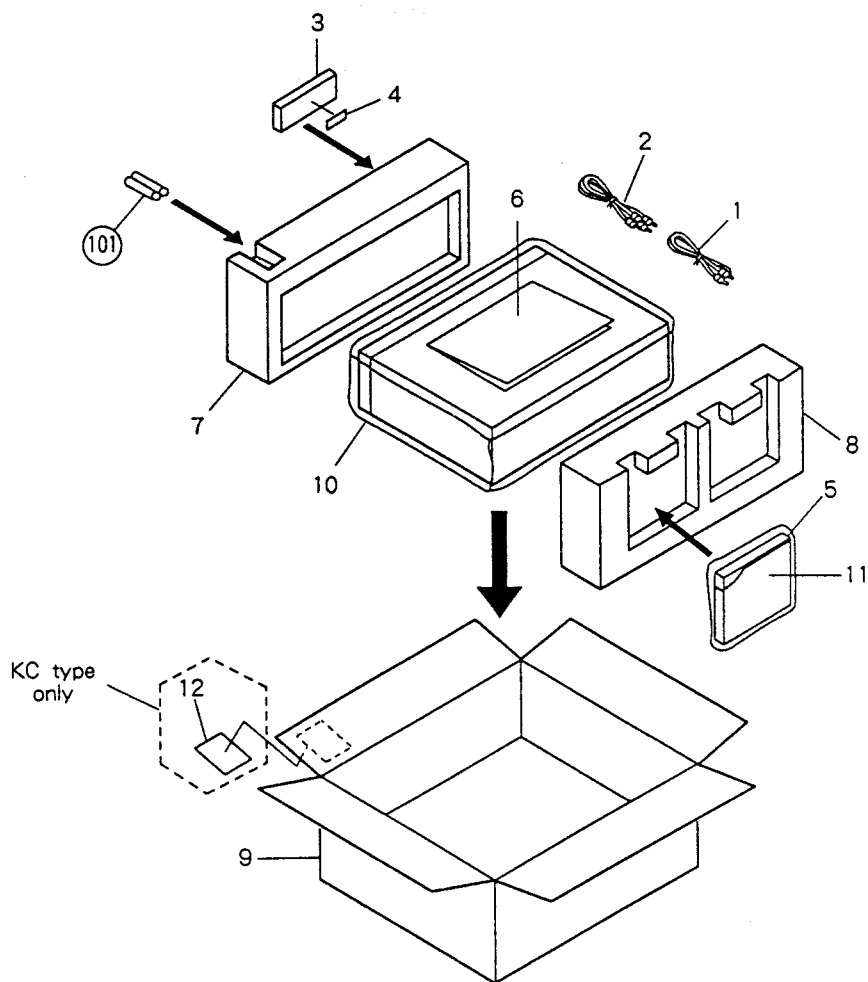
Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634		49	Guide bar	PLA1094
	2	Gear holder	PNW1929		50	Disc table	PNW1067
	3	.....			51	Gear 1	PNW2052
	4	Cam gear	PNW1923		52	Gear 2	PNW2053
	5	Belt	PEB1138		53	Gear 3	PNW2054
	6	Top guide	PNW1914		54	Pinion gear	PNW2055
	7	Gear pulley	PNW1918		55	PWB holder	PNW2057
	8	Gear S	PNW1919		56	Carriage DC motor / 0.3W	PXM1027
	9	Gear L	PNW1920		57	D.C. motor assembly (spindle with oil)	PEA1207
	10	Eject spring	PBH1107				
	11	Switch lever	PNW1927		58	Pickup assembly	PEA1179
	12	Seven bar	PNW1931		59	Disc table assembly	PEA1035
	13	Sub rotary lever	PNW1933		60	Screw	BBZ26P060FMC
	14	Sub rotary lever spring	PBH1111		61	Screw	BPZ20P060FMC
	15	Rotary lever	PNW1932		62	Screw	BPZ26P100FMC
	16	Drive plate	PNW1930		63	Screw	JFZ17P025FZK
	17	Motor screw	PBA - 112		64	Screw	JFZ20P040FMC
	18	Holder lever spring	PBH1110		65	Washer	WT12D032D025
	19	Disc holder	PNW1924				
	20	Cushion A	PED1001				
	21	Holder lever	PNW1925		101	Motor	VXM1033
	22	Float rubber	PEB1014		102	Eject lever	PNB1306
	23	Float rubber	PEB1132		103	Upper chassis	PNB1267
	24	Float screw	PBA1055		104	Servo mechanism assembly M	PXA1417
	25	Release lever	PNW1934				
	26	Release spring	PBH1106		105	Loading board assembly	PWZ2038
	27	Clamper cam	PNW1922		106	Sub chassis	PNW2027
	28	Clamper holder	PNW1921		107	Rubber tube	PEB1171
	29	Clamper spring	PBH1109		108	Main chassis	PNW2026
	30	Clamper	PNW1857		109	Select board assembly	PWZ2039
	31	Lock lever	PNW1917		110	Motor board assembly	PWZ2040
	32	Lock spring	PBH1108		111	Mechanism board assembly	PWX1192
	33	Stair L	PNW1915		112	Earth lead unit	PDF1118
	34	Stair R	PNW1916		113	Clamp magnet	PMF1014
	35	Synchronize lever	PNW1926		114	Gear stopper	PNB1303
	36	Motor assembly (LOADING, DISC SELECT)	PEA1130		115	Yoke M	PNB1312
	37	Screw	PMZ26P040FMC		116	AV angle	PNB1405
	38	Screw	PPZ30P080FMC		117	Carriage base	PNW2058
	39	Screw	BBZ30P060FMC				
	40	Washer	WT26D047D025				
	41	Washer	WA31D054D025				
	42	E ring	Z39 - 010				
	43	Screw	IPZ30P080FMC				
	44	Rubber spacer	PEB1178				
	45	Rubber spacer	PEB1179				
	46	Silent ring	PBK1093				
	47	Washer	WA62D130D025				
	48	Earth spring	PBH1132				

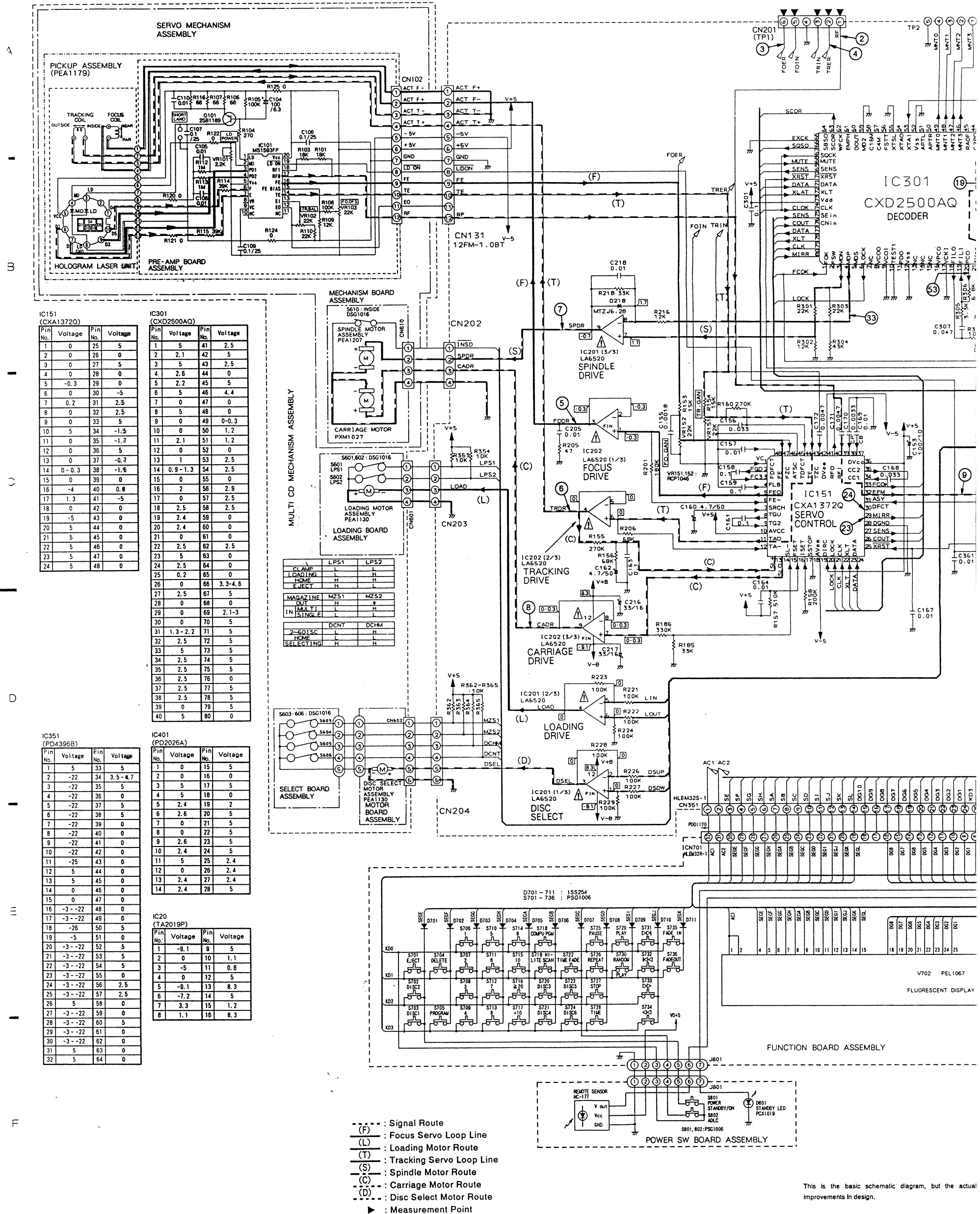
3. PACKING

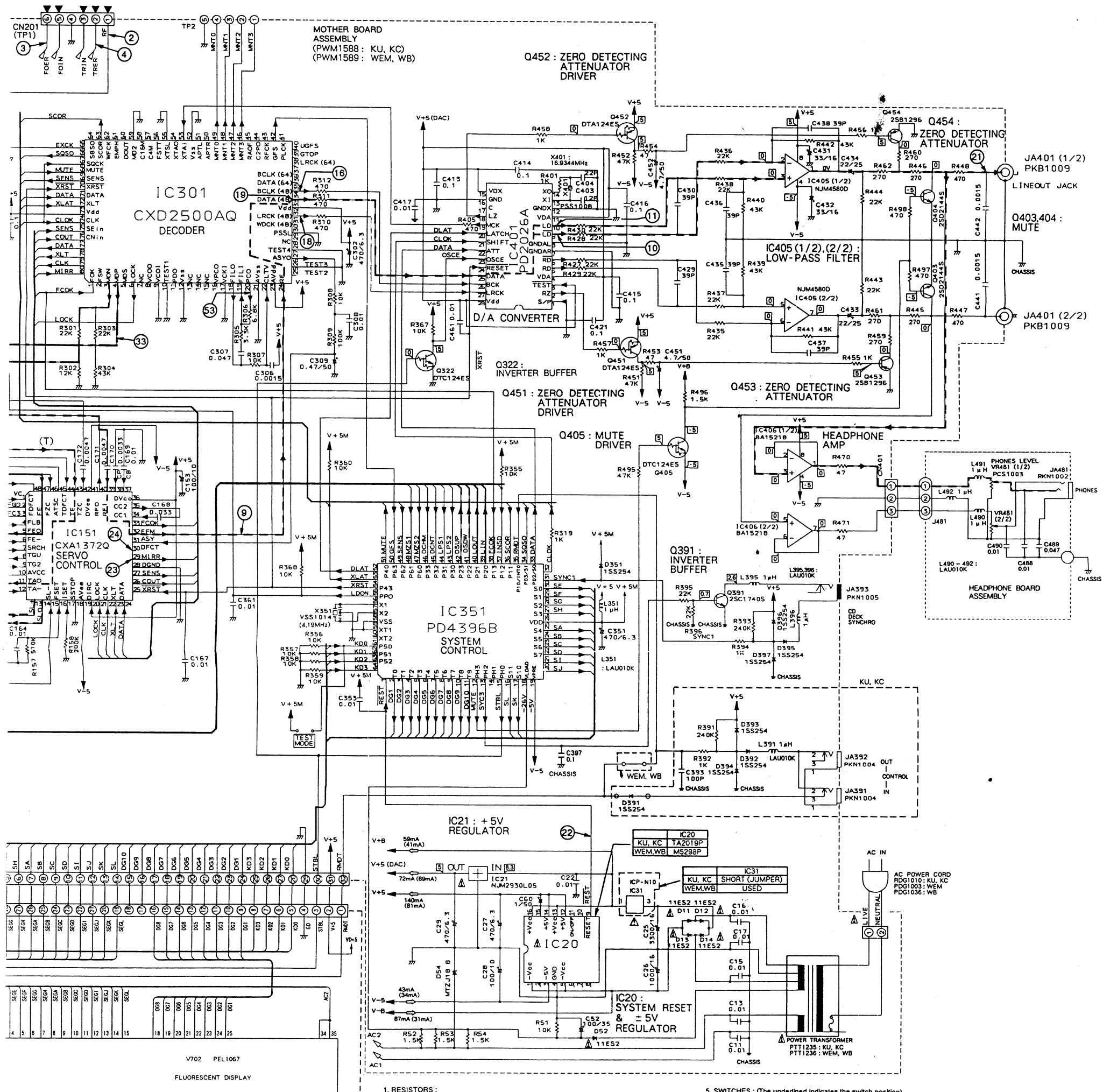
Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Connection cord with mini plug	PDE-319	9	CD packing case	PHG1787	
	2	Connection cord with pin plug	PDE1109	10	Mirror mat sheet	Z23-007	
	3	Remote control unit	PWW1066	11	PP case	PYY1141	
	4	Battery cover	PZN1001	12	Recycle label (KC type only)	PRW1253	
	5	Magazine assembly	PXA1308				
	6	Operating instructions (English)	PRB1175	101	Dry cell battery(R03, AAA)	VEM-022	
	7	Styrol protector F	PHA1155				
	8	Styrol protector R	PHA1156				



5.2 SCHEMATIC DIAGRAM





FUNCTION BOARD ASSEMBLY

DE01
STANDARD LED
PC1019

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

1. RESISTORS:

Indicated in Ω , 1/4W, 1/6W and 1/8W, $\pm 5\%$ tolerance unless otherwise noted k; k Ω , M; M Ω , (F); $\pm 1\%$, (G); $\pm 2\%$, (K); $\pm 10\%$, (M); $\pm 20\%$ tolerance.

2. CAPACITORS:

Indicated in capacity (μ F) / voltage(V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

□ : DC voltage (V) at play state.
○ : mA
□ : DC current at play state.
Value in () is DC current at stop state.

4. OTHERS:

→ : Signal route.
⊙ : Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.

5. SWITCHES: (The underlined indicates the switch position)

LOADING BOARD ASSEMBLY

S601: LPS1

S602: LPS2

SELECT BOARD ASSEMBLY

S603: MZS1

S604: MZS2

S605: DCHM

S606: DCNT

MECHANISM BOARD ASSEMBLY

S610: INSIDE

FUNCTION BOARD ASSEMBLY

S701: Δ (EJECT)

S702: DISC2

S703: DISC1

S704: DELETE

S705: PGM

S706: 1

S707: 2

S708: 3

S709: 4

S710: 5

S711: 6

S712: 7

S713: 8

S714: 9

S715: 10

S716: ≥ 20

S717: ≥ 10

S718: COMPU PGM EDIT

S719: HI - LITE SCAN

S720: DISC3

S721: DISC4

S722: TIME FADE EDIT

S723: DISC 5

S724: DISC 6

S725: II (PAUSE)

S726: REPEAT

S727: \blacksquare (STOP)

S728: TIME

S729: \blacktriangleright (PLAY)

S730: RANDOM PLAY

S731: $\blacktriangleright\blacktriangleright$ TRACK SEARCH

S732: $\blacktriangleleft\blacktriangleleft$

S733: $\blacktriangleright\blacktriangleright$ MANUAL SEARCH

S734: $\blacktriangleleft\blacktriangleleft$

S735: IN

S736: OUT

B

C

D

E

F

4. IC INFORMATION

■ PD4396B (IC351)

System control

● Pin Function

No.	Mark	Pin Name	I/O	Function	No.	Mark	Pin Name	I/O	Function
1	RESET	REST		CPU reset (L : reset)	33	P02/S0	DATA	O	Serial output of LSI control data
2	T0	DG1		DIGIT output for FL drive	34	P03/S1	SQSO	I	Serial input of subcode Q data
3	T1	DG2			35	P10/INT	RMDT	I	Remote control data input
4	T2	DG3			36	P11	SCOR	I	Subcode synch. S0 + S1 input
5	T3	DG4			37	P12	INSD	I	Slider inside SW input (L : INSIDE)
6	T4	DG5			38	P13	FCOK	I	Focus OK input (H : OK, L : NG)
7	T5	DG6			39	P20	L IN		Disc tray IN / OUT *1
8	T6	DG7			40	P21	L OUT	O	
9	T7	DG8			41	P22	DSDW		Disc selector UP/DOWN *2
10	T8	DG9			42	P23	DSUP	O	
11	T9	DG10			43	P30	LPS2		Load position SW input *3
12	PH3	MUTE	O	Muting output (L : Mute, H : OFF)	44	P31	LPS1	I	
13	PH2	SYC3	O	Syncro output	45	P32	DCNT	I	Disc selector count pulse *4
14	PH1	—		NC (Not used.)	46	P33	DCHM	I	Disc selector home *4
15	PH0	STBL	O	Standby LED output (L : Goes off, H : Light)	47	P60	MZS2	I	Magazine discrimination *5 SW input
16	S11	SL		SEGMENT output for FL drive	48	P61	MZS1		
17	S10	SK	O*		49	P62	SENS	I	Multi mode input of LSI operation state
18	VLOAD			- 26V	50	P63	GFS	I	Frame sync. lock input (H : OK, L : NG)
19	VPRE			- 5V	51	P40	MUTE		Muting output (H : Mute, L : OFF)
20	S9	SJ		SEGMENT output for FL drive	52	P41	DLAT		Latch pulse for D/A converter IC
21	S8	SI			53	P42	XLAT	O	Latch pulse of LSI control data
22	S7	SD			54	P43	XRST		LSI reset (L : Reset, H : Release)
23	S6	SC			55	PP0	LDON		Laser diode output (H : OFF, L : ON)
24	S5	SB			56	X1	X1		Main system clock oscillation
25	S4	SA			57	X2	X2		
26	VDD	VDD		+5V	58	VSS	VSS		GND
27	S3	SH		SEGMENT output for FL drive	59	XT1	—		GND (Not used.)
28	S2	SG			60	XT2	—		NC (Not used.)
29	S1	SF			61	P50	KD0/TEST		Key scan input and TEST mode required input
30	S0	SE			62	P51	KD1		Key scan input
31	P00	SYNC1	I	Syncro input	63	P52	KD2		
32	SCK	CLOCK	O	Serial clock	64	P53	KD3		

O* : Output terminals with pull-down resistor.

*1 : Loading selector

Tray	L OUT	L IN
IN	L	H
OUT	H	L
STOP	L	L

*3 : Loading position SW

	LPS1	LPS2
CLAMP	L	L
LOADING	L	H
HOME	H	H
EJECT	H	L

*4 : DISC select

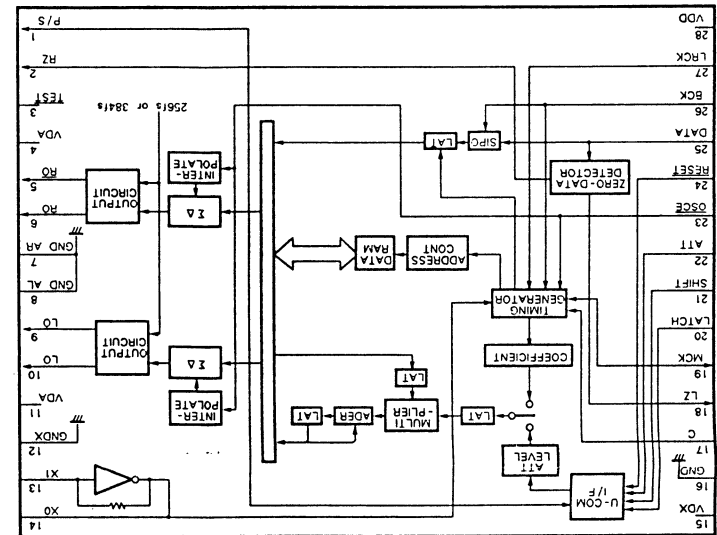
	DCNT	DCHM
2 - 6 DISC	L	H
HOME	L	L
During select	H	*

*5 : Magazine discrimination

	MZS1	MZS2
Magazine OUT	H	*
IN MULTI	L	H
IN SINGLE	L	L

*2 : Disc selector UP / DOWN

Selector	DSDW	DSUP
UP	L	H
DOWN	H	L
STOP	L	L

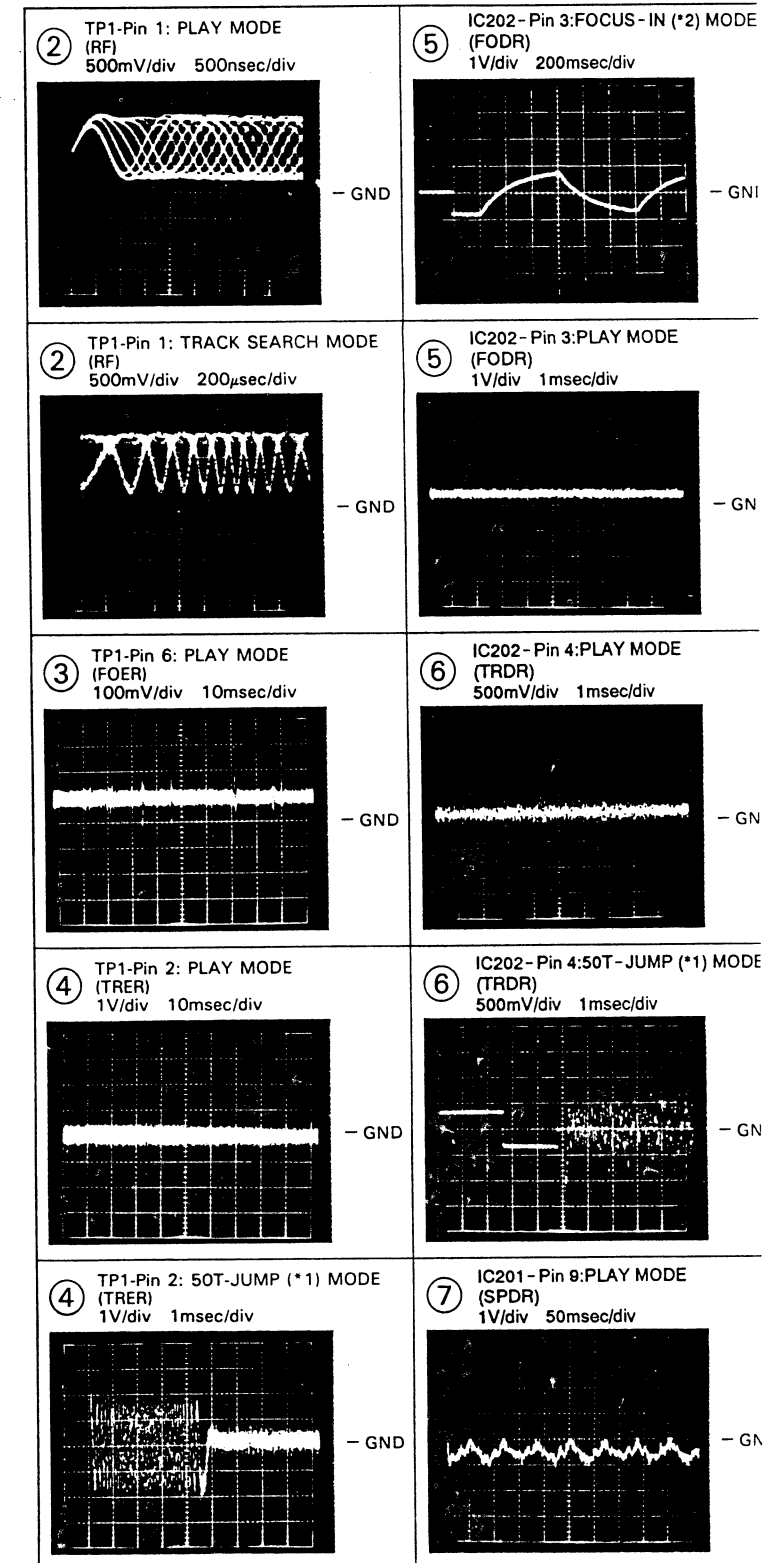


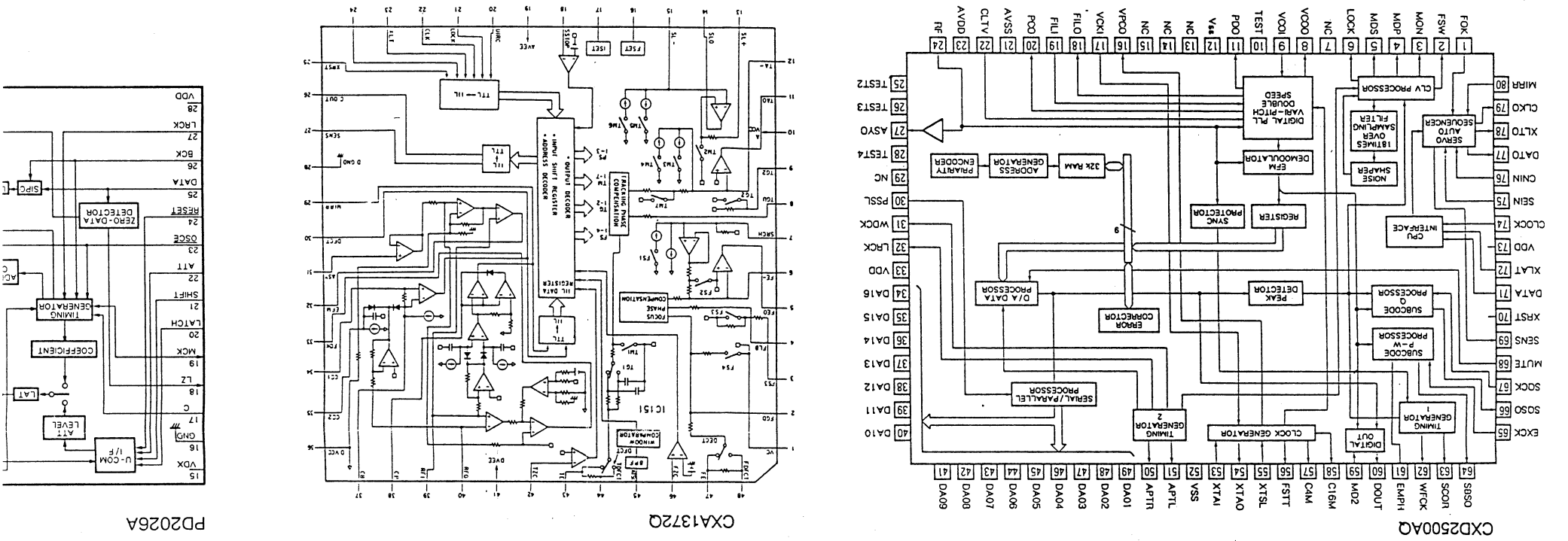
PD2026A

5. SCHEMATIC DIAGRAM

5.1 WAVEFORMS

Note: The encircled numbers denote measuring points in the schematic diagram.

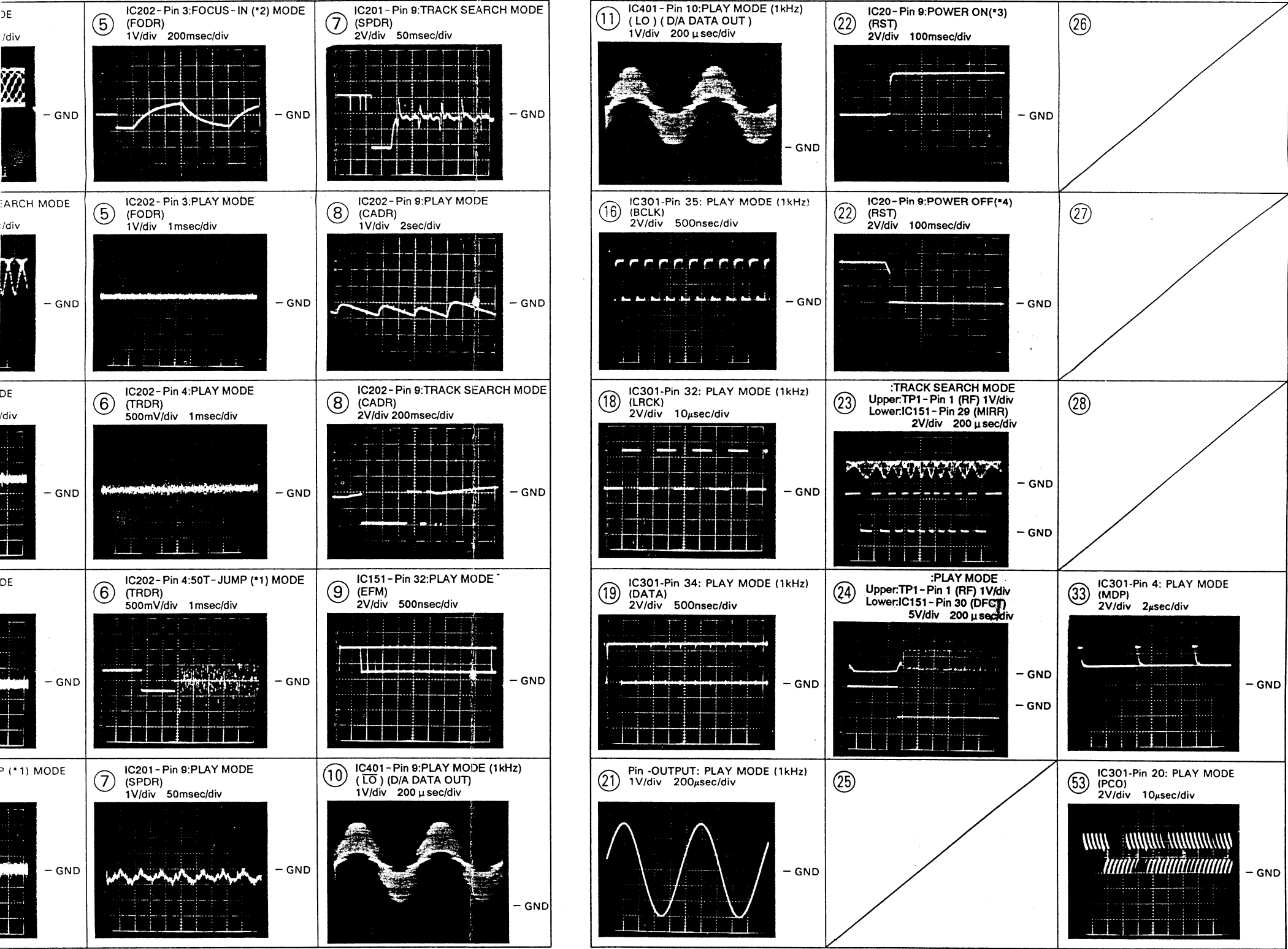




● IC BLOCK DIAGRAMS

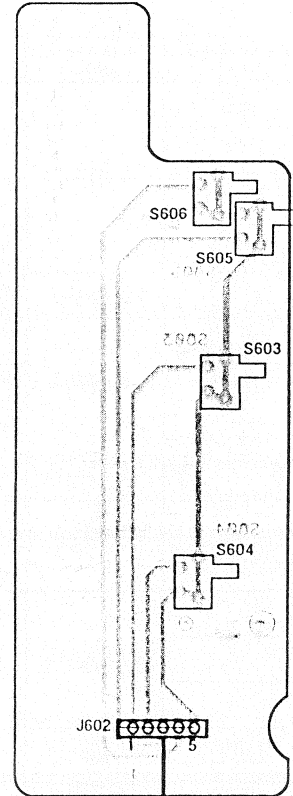
IC DIAGRAM

- note measuring points in the
- *1 50T-JUMP: After switching to the pause mode, press the manual search key.
 - *2 FOCUS-IN: Press the key without loading a disc.
 - *3 POWER ON : Plug AC cord into AC wall socket.
 - *4 POWER OFF: Unplug AC cord from AC wall socket.



6. P.C.BOARDS CONNECTION DIAGRAM

SELECT BOARD
ASSEMBLY



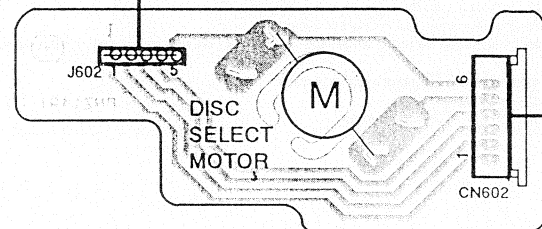
IC151
(CXA1372Q)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	-0.3	29	0
6	0	30	-5
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.5
11	0	35	-1.7
12	0	36	5
13	0	37	-0.7
14	0-0.3	38	-1.6
15	0	39	0
16	-4	40	0.8
17	1.3	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC20
(TA2019P)

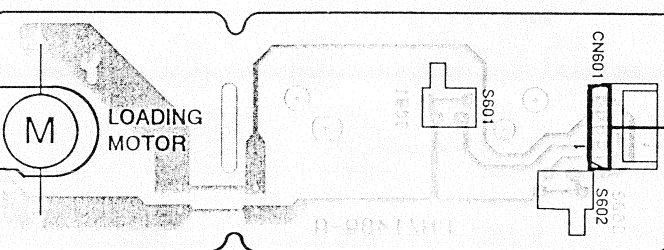
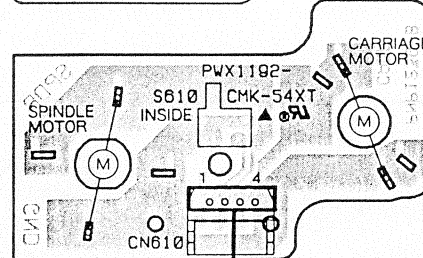
Pin No.	Voltage	Pin No.	Voltage
1	-9.1	9	5
2	0	10	1.1
3	-5	11	0.6
4	0	12	5
5	-9.1	13	8.3
6	-7.2	14	5
7	3.3	15	1.2
8	1.1	16	8.3

MOTOR BOARD ASSEMBLY



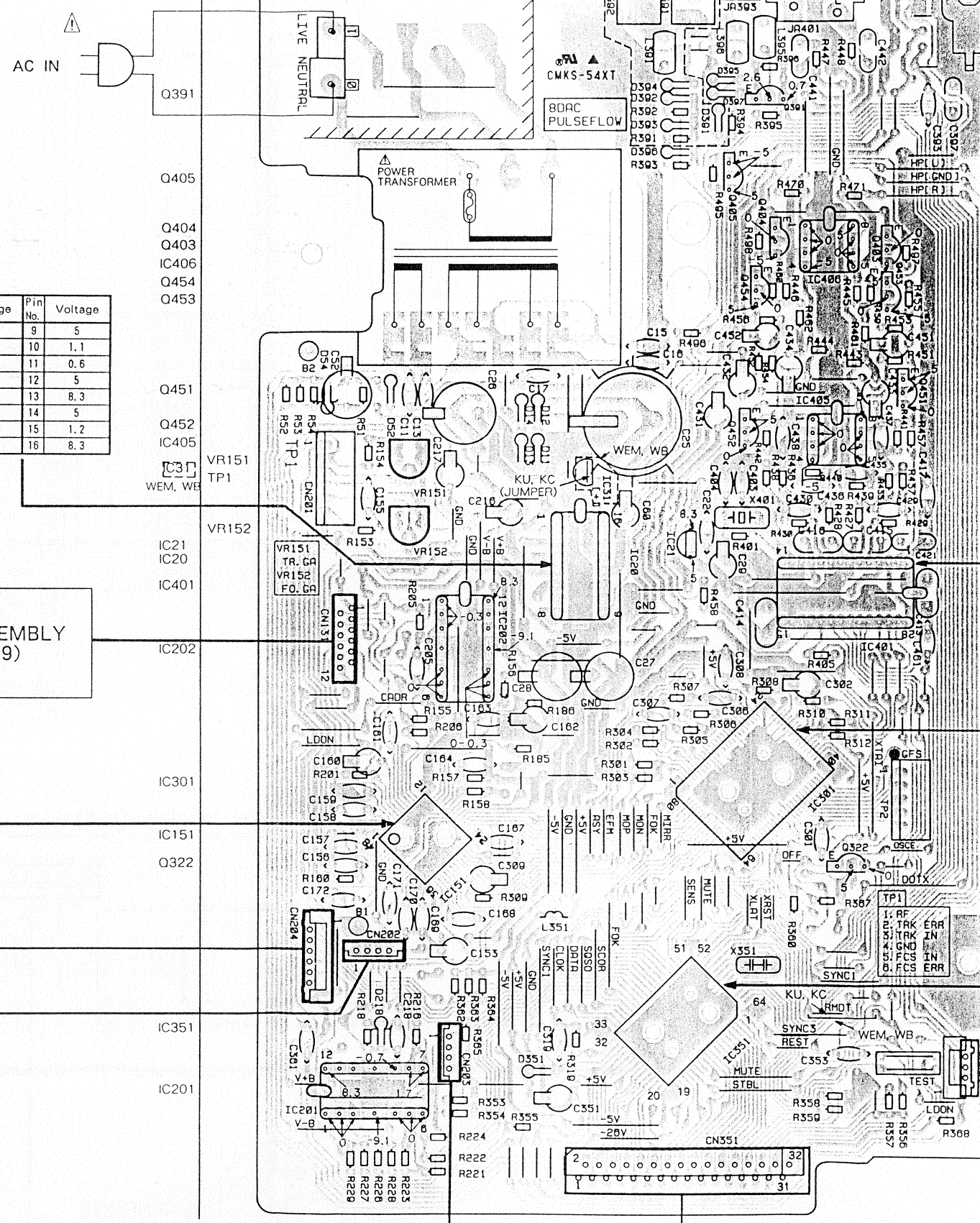
PICKUP ASSEMBLY
(PEA1179)

MECHANISM
BOARD
ASSEMBLY

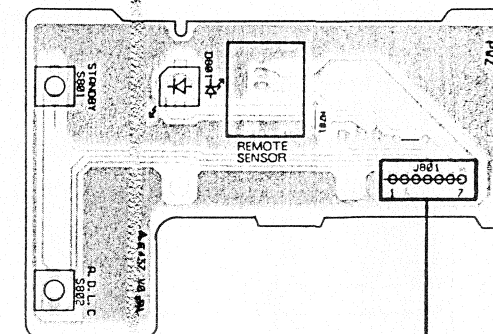


LOADING BOARD ASSEMBLY

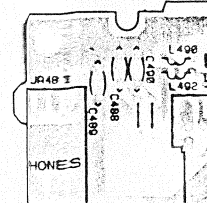
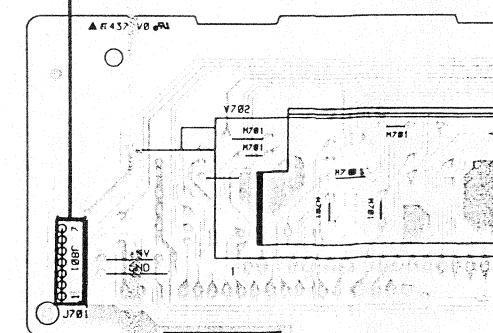
MOTHER BOARD ASSEMBLY
(PWM1588 : KU, KC)
(PWM1589 : WEM, WB)



POWER SW BOARD
ASSEMBLY



FUNC

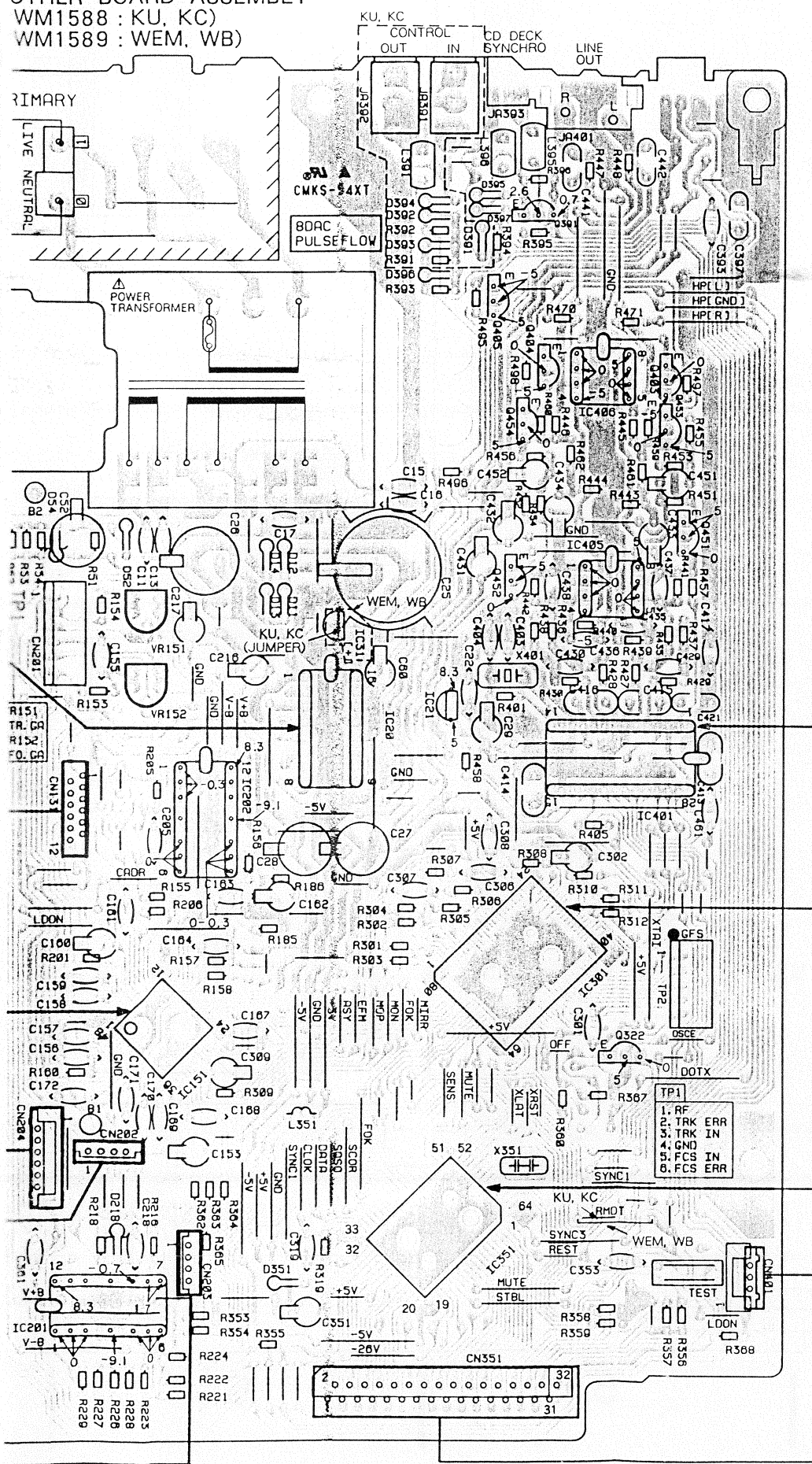


IC401
(PD2026A)

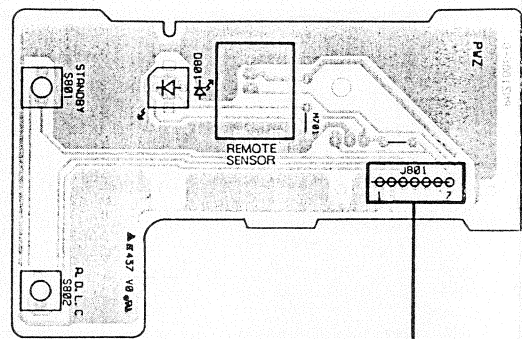
Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5

OTHER BOARD ASSEMBLY
WM1588 : KU, KC)
WM1589 : WEM, WB)

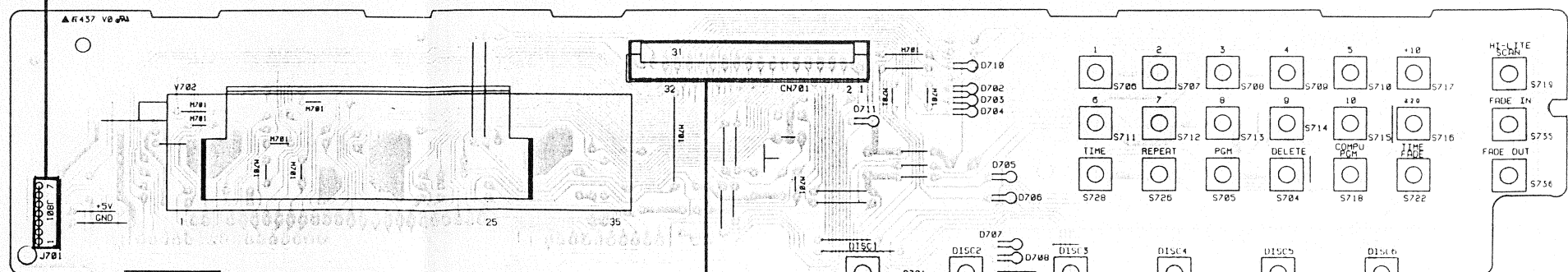
PRIMARY



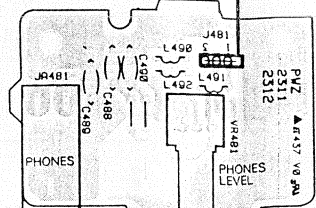
POWER SW BOARD ASSEMBLY



FUNCTION BOARD ASSEMBLY



HEADPHONE BOARD ASSEMBLY



IC401
(PD2026A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5

IC351
(PD4396B)

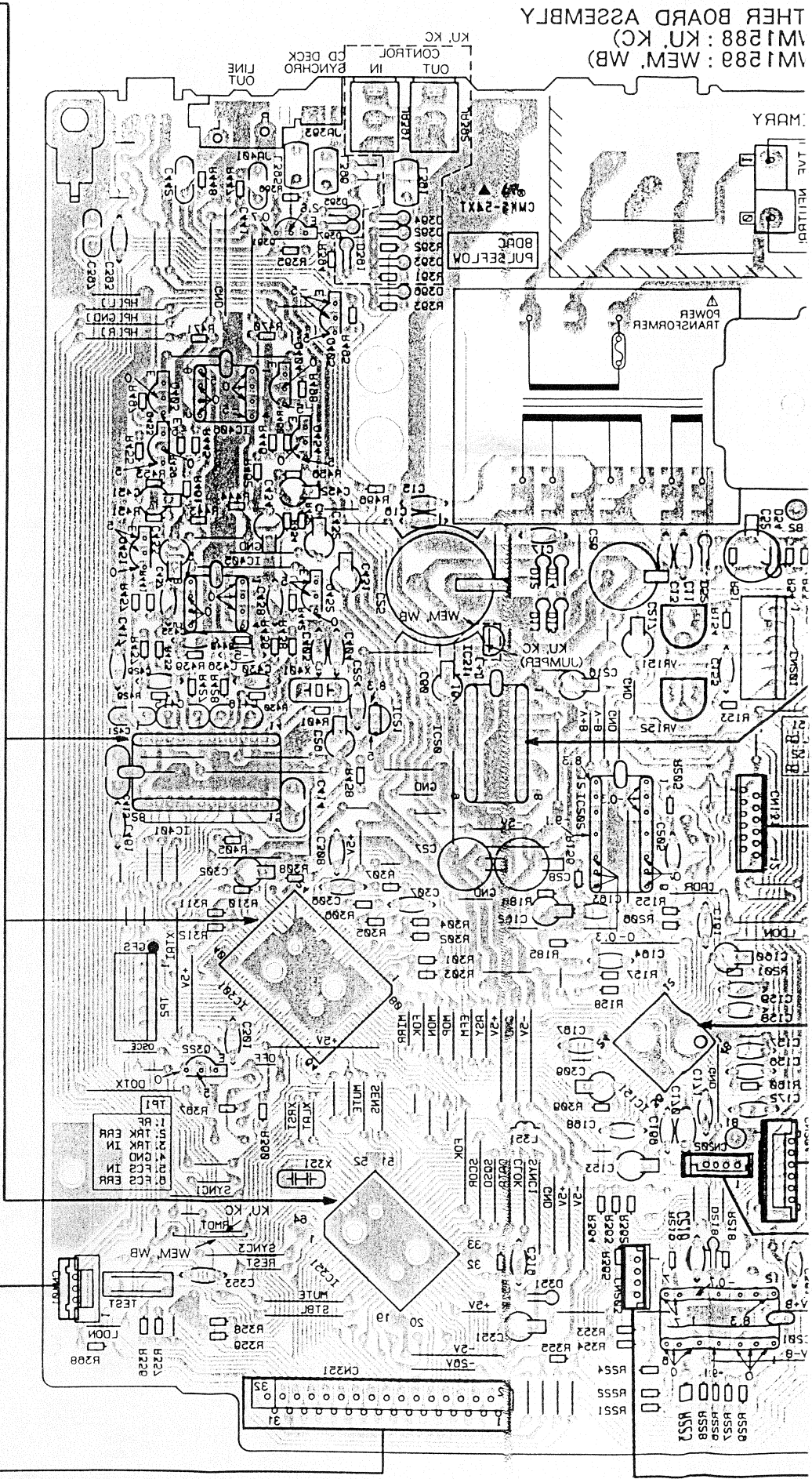
Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-22	34	3.5 - 4.7
3	-22	35	5
4	-22	36	0
5	-22	37	5
6	-22	38	5
7	-22	39	0
8	-22	40	0
9	-22	41	0
10	-22	42	0
11	-25	43	0
12	5	44	0
13	5	45	0
14	0	46	0
15	0	47	0
16	-3 - -22	48	0
17	-3 - -22	49	0
18	-26	50	5
19	-5	51	0
20	-3 - -22	52	5
21	-3 - -22	53	5
22	-3 - -22	54	5
23	-3 - -22	55	0
24	-3 - -22	56	2.5
25	-3 - -22	57	2.5
26	5	58	0
27	-3 - -22	59	0
28	-3 - -22	60	5
29	-3 - -22	61	0
30	-3 - -22	62	0
31	5	63	0
32	5	64	0

IC301
(CXD2500AQ)

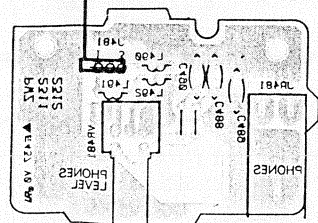
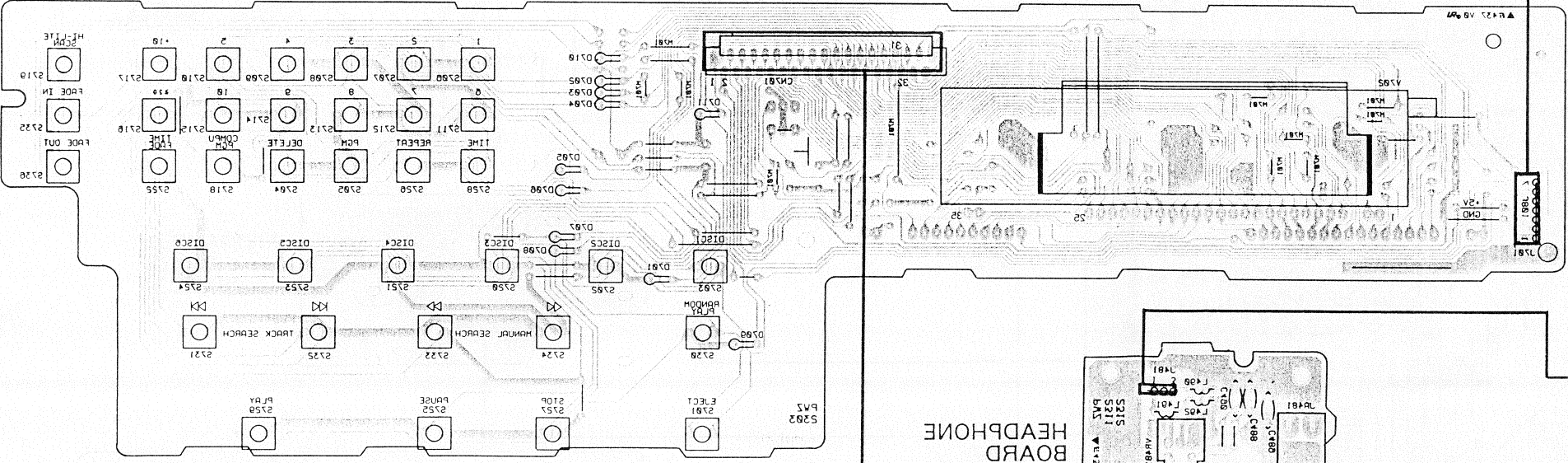
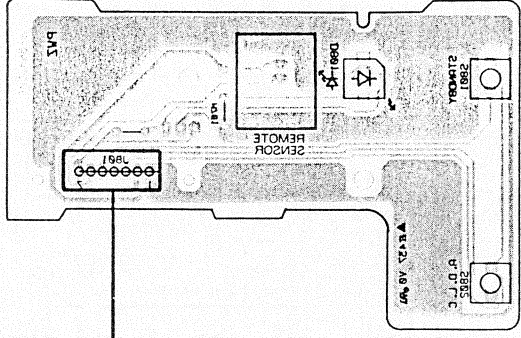
Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0-0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1	53	2.5
14	0.9 - 1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3-4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1-3
30	0	70	5
31	1.3 - 2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

P.C.B. pattern diagram	Corresponding part symbol	Part name	P.C.B. pattern diagram	Corresponding part symbol	Part name
		Resistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Electrolytic capacitor (Polarized)
		Inductor			Power capacitor
		Coil			Semi-fixed resistor
		Transformer			Resistor array
		Filter			Resistor
					Resonator
					Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.



POWER SW BOARD
ASSEMBLY



A

B

C

D

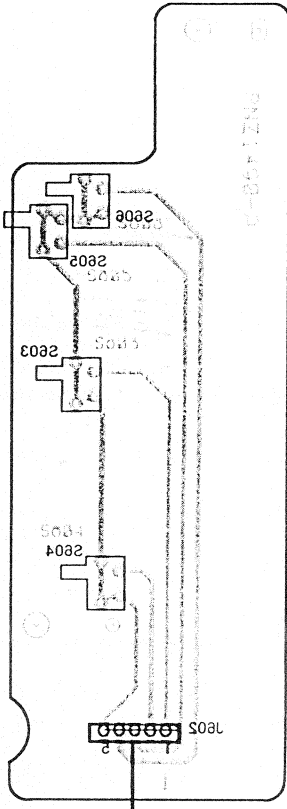
A

B

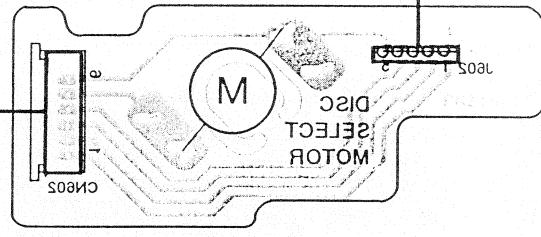
C

D

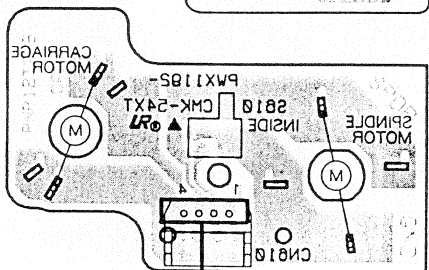
SELECT BOARD
ASSEMBLY



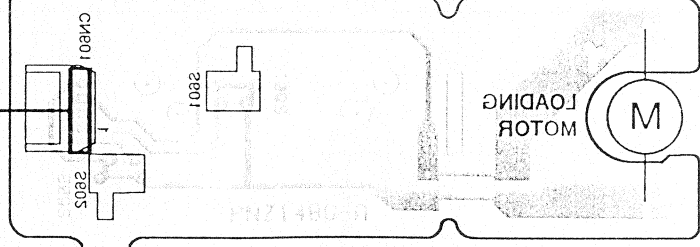
MOTOR BOARD ASSEMBLY



BOARD
MECHANISM



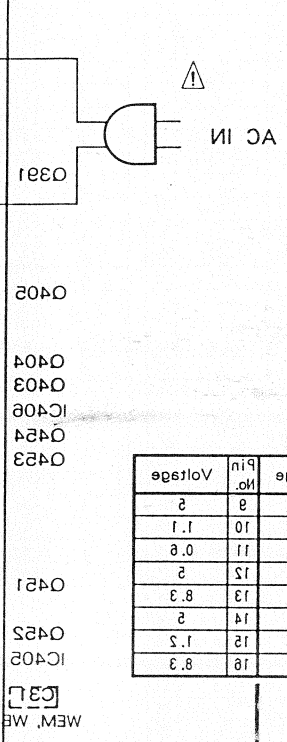
LOADING BOARD ASSEMBLY



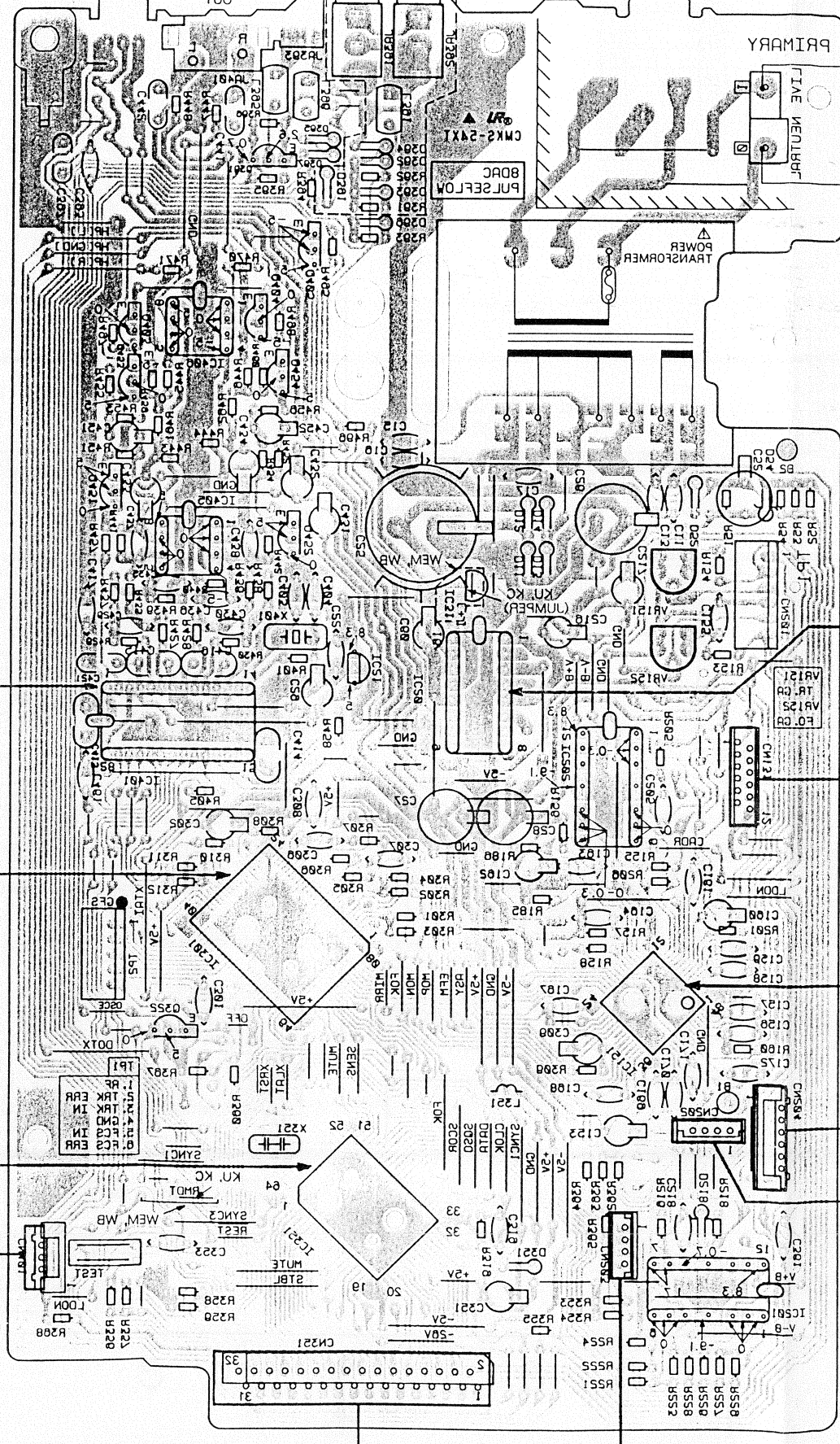
This P.C.B. connection diagram is viewed from the foil side.

Pin	No.	Voltage
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	0	0
48	0	0

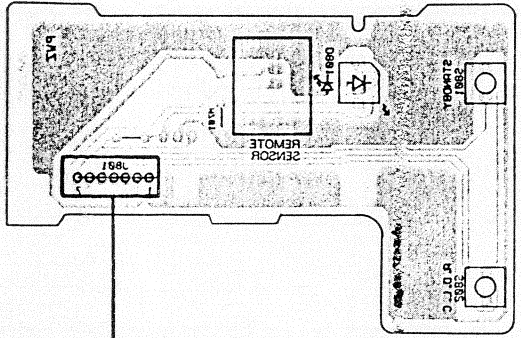
Pin	No.	Voltage
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	0	0
48	0	0



MOTHER BOARD ASSEMBLY
(PWM1588 : KU, KC)
(MWM1588 : MWM, WB)



POWER SW BOARD
ASSEMBLY



Pin	No.	Voltage
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	0	0
48	0	0

7. PCB PARTS LIST

NOTES:

- Part without part number cannot be supplied.
 - Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 - When ordering resistors, first convert resistance values into code form as shown in the following examples.
- Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
- | | | | | |
|--------------|------------------|-----|---------|------|
| 560 Ω | 56×10^1 | 561 | RD1/8PM | 561J |
| 47k Ω | 47×10^3 | 473 | RD1/4PS | 473J |
| 0.5 Ω | 0R5 | | RN2H | 0R5K |
| 1 Ω | 010 | | RS1P | 010K |
- Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- | | | | | |
|----------------|-------------------|------|---------|-------|
| 5.62k Ω | 562×10^1 | 5621 | RN1/4SR | 5621F |
|----------------|-------------------|------|---------|-------|

Mark	No.	Description	Part No.
------	-----	-------------	----------

LIST OF ASSEMBLIES

- | | | |
|---|----------------------------|---------|
| ⊙ | Mother board assembly | PWM1588 |
| | Mechanism board assembly | |
| | Loading board assembly | |
| | Select board assembly | |
| ⊙ | Sub board assembly | PWM1593 |
| | └ Function board assembly | |
| | └ Power SW board assembly | |
| | └ Headphone board assembly | |
| | Motor board assembly | |

⊙ MOTHER BOARD ASSEMBLY (PWM1588)

SEMICONDUCTORS

- | | | | |
|----------|------------|---------------------|------------|
| | IC151 | SERVO IC | CXA1372Q |
| Δ | IC20 | REGULATOR IC | TA2019P |
| Δ | IC201, 202 | POWER OP-AMP, IC | LA6520 |
| Δ | IC21 | REGULATOR, IC | NJM2930L05 |
| | IC301 | EFM DEMODULATION IC | CXD2500AQ |
| | IC351 | MICROCOMPUTER, IC | PD4396B |
| | IC401 | D/A CONVERTER, IC | PD2026A |
| | IC405 | OP-AMP IC | NJM4580D |
| | IC406 | OP-AMP IC | BA15218 |
| | Q322 | TRANSISTOR | DTC124ES |
| | Q391 | TRANSISTOR | 2SC1740S |
| | Q403, 404 | TRANSISTOR | 2SD2144S |
| | Q405 | TRANSISTOR | DTC124ES |
| | Q451, 452 | TRANSISTOR | DTA124ES |
| | Q453, 454 | TRANSISTOR | 2SB1296 |
| Δ | D11-14 | DIODE | 11ES2 |
| | D218 | ZENNER DIODE | MTZJ6.2B |
| | D351 | DIODE | 1SS254 |
| | D391-397 | DIODE | 1SS254 |
| Δ | D52 | DIODE | 11ES2 |
| | D54 | ZENNER DIODE | MTZJ18B |

COILS

- | | | | |
|--|-----------|----------------|---------|
| | L351, 391 | AXIAL INDUCTOR | LAU010K |
| | L395, 396 | AXIAL INDUCTOR | LAU010K |

Mark	No.	Description	Part No.
------	-----	-------------	----------

CAPACITORS

- | | | | |
|--|-----------|----------------------------|-------------|
| | C11, 13 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C15 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C153 | ELECTR. CAPACITOR | CEAS101M10 |
| | C155 | CERAMIC CAPACITOR | CKCYB182K50 |
| | C156 | CERAMIC CAPACITOR | CCCYX333K25 |
| | C157 | CERAMIC CAPACITOR | CCCYX103K25 |
| | C158, 159 | CERAMIC CAPACITOR | CCCYX104K25 |
| | C16 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C160 | ELECTR. CAPACITOR | CEAS4R7M50 |
| | C161 | CERAMIC CAPACITOR | CCCYX104K25 |
| | C162 | ELECTR. CAPACITOR | CEAS4R7M50 |
| | C163 | CERAMIC CAPACITOR | CCCYX104K25 |
| | C164 | CERAMIC CAPACITOR | CCCYX103K25 |
| | C167 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C168 | CERAMIC CAPACITOR | CCCYX333K25 |
| | C169 | CERAMIC CAPACITOR | CCCYX103K25 |
| | C17 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C170 | CERAMIC CAPACITOR | CKCYB332K50 |
| | C171, 172 | CERAMIC CAPACITOR | CKCYB472K50 |
| | C205, 22 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C216, 217 | ELECTR. CAPACITOR | CEAS330M16 |
| | C218 | CERAMIC CAPACITOR | CCCYX103K25 |
| | C25 | ELECTR. CAPACITOR | CEAS332M16 |
| | C26 | ELECTR. CAPACITOR | CEAS102M16 |
| | C27 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | C28 | ELECTR. CAPACITOR | CEAS101M10 |
| | C29 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | C301 | CERAMIC CAPACITOR | CCCYX104K25 |
| | C302 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | C306 | CERAMIC CAPACITOR | CKCYB152K50 |
| | C307 | CERAMIC CAPACITOR | CCCYX473K25 |
| | C308 | CERAMIC CAPACITOR | CCCYX103K25 |
| | C309 | ELECTR. CAPACITOR | CEAS471M6R3 |
| | C351 | ELECTROLYTIC CAPACIT | CEAS471M6R3 |
| | C353, 361 | CERAMIC CAPACITOR | CKCYF103Z50 |
| | C393 | CERAMIC CAPACITOR | CCSL101J50 |
| | C397 | FILM CAPACITOR(0.1 μ) | PQ1032 |
| | C403 | CERAMIC CAPACITOR | CCCH120J50 |
| | C404 | CERAMIC CAPACITOR | CCCH220J50 |
| | C413-416 | FILM CAPACITOR(0.1 μ) | PQ1032 |

Mark	No.	Description	Part No.
	C417	CERAMIC CAPACITOR	CKCYF103Z50
	C421	FILM CAPACITOR(0.1 μ)	PCL1032
	C429, 430	CERAMIC CAPACITOR	CCCCH390J50
	C431, 432	ELECTR. CAPACITOR	CEAS330M16
	C433, 434	ELECTR. CAPACITOR	CEAS220M25
	C435-438	CERAMIC CAPACITOR	CCCCH390J50
	C441, 442	FILM CAPACITOR(0.0015 μ)	PCL1030
	C451, 452	ELECTR. CAPACITOR	CEAS4R7M50
	C461	CERAMIC CAPACITOR	CKCYF103Z50
	C52	ELECTR. CAPACITOR	CEAS101M35
	C60	ELECTR. CAPACITOR	CEAS010M50

RESISTORS

VR151, 152	VR(22k Ω)	RCP1046
OTHER RESISTORS		RD1/6PM□□□□

OTHERS

X351	CERAMIC RESONATOR(4.19MHz)	VSS1014
X401	XTAL RES (16.9344MHz)	PSS1008
CN131	12P FFC CONNECTOR	12FM-1.0BT
CN351	32P FFC CONNECTOR	HLEM32S-1
JA391, 392	JACK/12V(CONTROL IN, OUT)	PKN1004
JA393	MINI JACK(CD DECK SYNCHRO)	PKN1005
JA401	2P PIN JACK(LINE OUT)	PKB1009

MECHANISM BOARD ASSEMBLY

SWITCH

S610	PUSH SWITCH(INSIDE)	DSG1016
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LOADING BOARD ASSEMBLY

SWITCHES

S601, 602	PUSH SWITCH (LPS1, LPS2)	DSG1016
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SELECT BOARD ASSEMBLY

SWITCHES

S603-606	PUSH SWITCH (MZS1, MZS2, DCHM, DCNT)	DSG1016
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FUNCTION BOARD ASSEMBLY

SEMICONDUCTORS

D701-711	DIODE	1SS254
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SWITCHES

S701-736	TACT SWITCH	PSG1006
(▲, DISC2, 1, DELETE, PGM, 1-10, \geq 20, +10, COMPU PGM EDIT, HI-LITE SCAN, DISC3, 4, TIME FADE EDIT, DISC5, 6, II, REPEAT, ■, TIME, ►, RANDOM PLAY, ►►, I◄◄, ►►, ◄◄, AUTO FADER(IN, OUT)		

OTHERS

V702	FL INDICATOR TUBE	PEL1067
CN701	32P FFC CONNECTOR	HLEM32R-1

Mark	No.	Description	Part No.
POWER SW BOARD ASSEMBLY			
SEMICONDUCTOR			
	D801	LED	PCX1019
SWITCHES			
	S801, 802	TACT SWITCH (POWER STANDBY/ON, ADLC)	PSG1006
OTHERS			
		REMOTE SENSOR	HC-177

HEADPHONE BOARD ASSEMBLY

COILS

L490-492	AXIAL INDUCTOR	LAU010K
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CAPACITORS

C488	CERAMIC CAPACITOR	CKCYF103Z50
C489	CERAMIC CAPACITOR	CKCYF473Z50
C490	CERAMIC CAPACITOR	CKCYF103Z50

RESISTOR

VR481	VARIABLE RESISTOR (PHONES LEVEL)	PCS1003
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OTHERS

JA481	JACK(PHONES)	RKN1002
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MOTOR BOARD ASSEMBLY

Motor board assembly has not service part.

8. ADJUSTMENTS

8.1 Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6(FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2(TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1(RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1(RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5(FCS. IN) TP1, Pin 6(FCS. ERR)	VR152(FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3(TRK. IN) TP1, Pin 2(TRK. ERR)	VR151(TRK. GAN)

● Abbreviation table

FCS. ERR	:Focus Error
TRK. ERR	:Tracking Error
FCS GAN	:Focus Gain
TRK GAN	:Tracking Gain
FCS. IN	:Focus In
TRK. IN	:Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Resistor (100 k Ω)
5. Standard tools

● Test Point and Adjustment Variable Resistor Positions

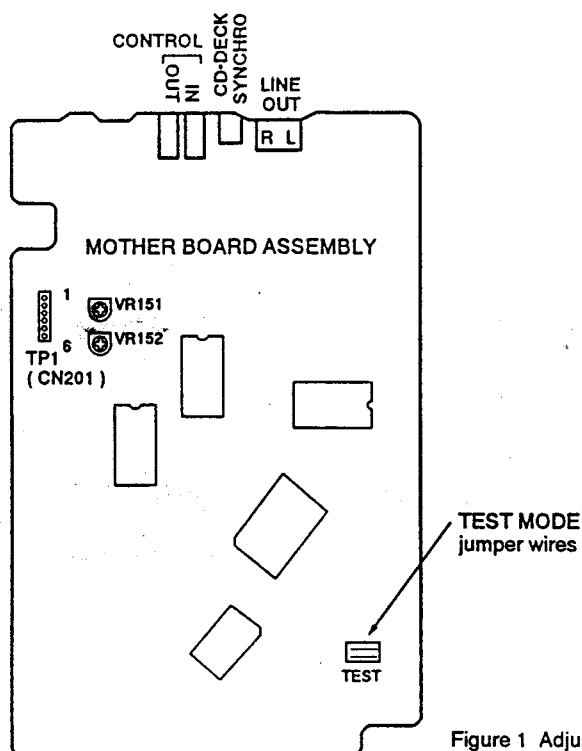


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	<p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.</p>
▷	PLAY	Spindle servo ON	<p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>
□□	PAUSE	Tracking servo close/open	<p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p>

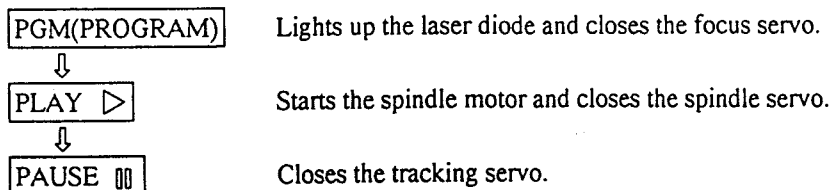
Code	Key Name	Function In Test Mode	Explanation
◀◀	MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▶▶	MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
△	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.



Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Verification

● Objective	Verify the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) None None needed
[Procedure] Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 50 mV.			

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

2. Tracking Error Balance Verification

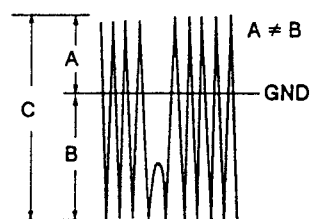
● Objective	To verify that there is no variation in the sensitivity of the tracking photo diode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

[Procedure]

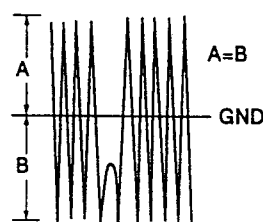
1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key.
2. Press the PGM (PROGRAM) key, then the PLAY \triangleright key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

$$A \geq B : \frac{A-B}{C} \times \frac{1}{2} \leq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leq 0.1$$



When there is a DC component



When there is no DC component

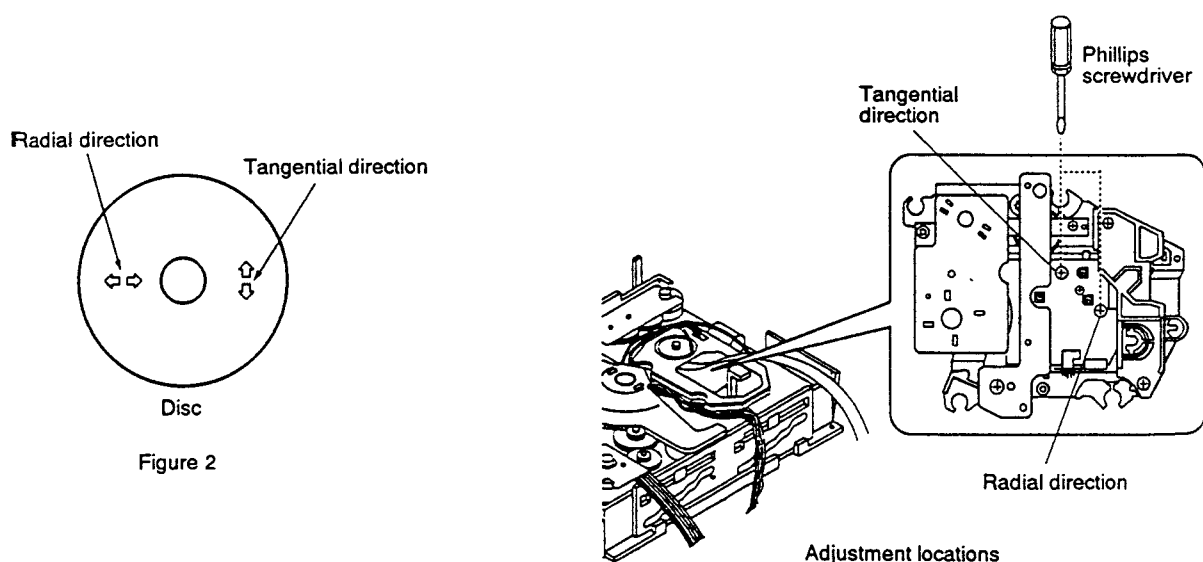
3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw. YEDS-7

[Procedure]

1. Press the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35mm). Press the PGM (PROGRAM) key, the PLAY \triangleright key, then the PAUSE $\square\square$ key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note: Radial and tangential mean the directions relative to the disc shown in Figure 2.



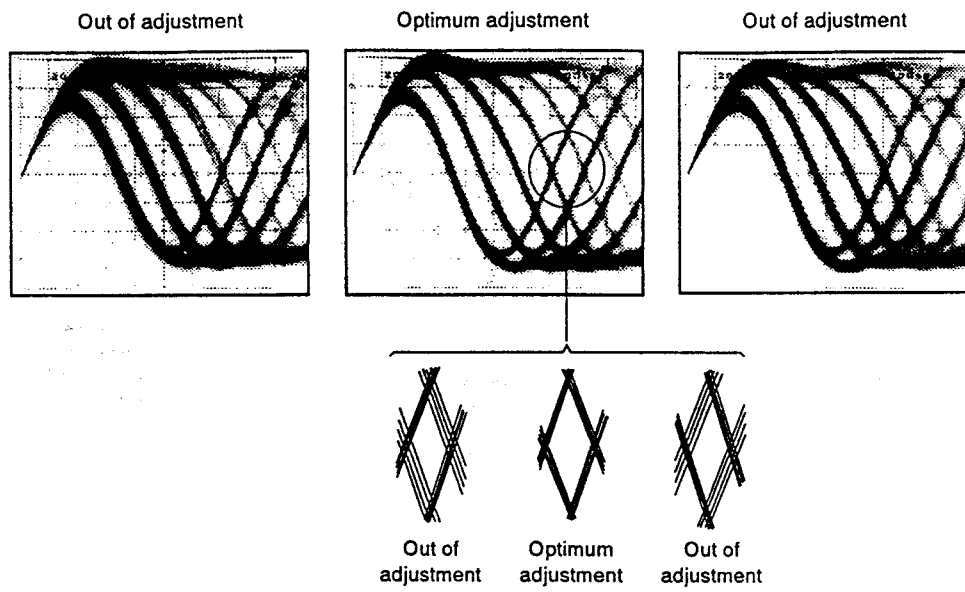


Figure 3 Eye pattern

4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF).	● Player state	Test mode, play
	[Settings] 50 mV/division 10 ms/division AC mode	● Adjustment location	None
		● Disc	YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE || key in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is $1.2 \text{ V}_{p-p} \pm 0.2 \text{ V}$.

5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1 20 mV/division X-Y mode	CH2 5 mV/division X-Y mode	● Player state Test mode, play ● Adjustment location VR152 (FCS. GAN) ● Disc YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY \triangleright key, then the PAUSE $\square\square$ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

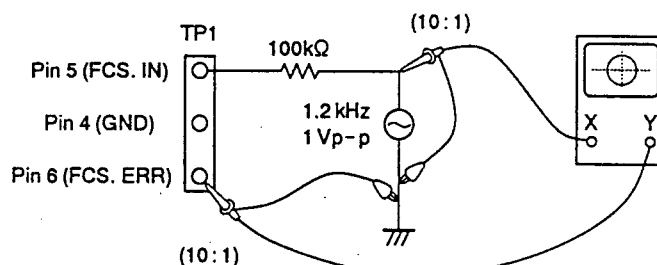
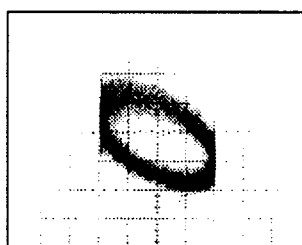
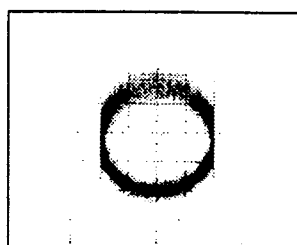


Figure 4

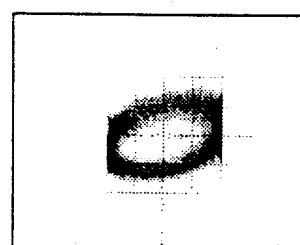
Focus Gain Adjustment



Higher gain



Optimum gain



Lower gain

6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 5.	● Player state	Test mode, play
	[Settings] CH1 CH2 50 mV/division 20 mV/division X - Y mode	● Adjustment location ● Disc	VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL SEARCH FWD $\triangleright\triangleright$ or REV $\triangleleft\triangleleft$ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY \triangleright key, then the PAUSE $\square\square$ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

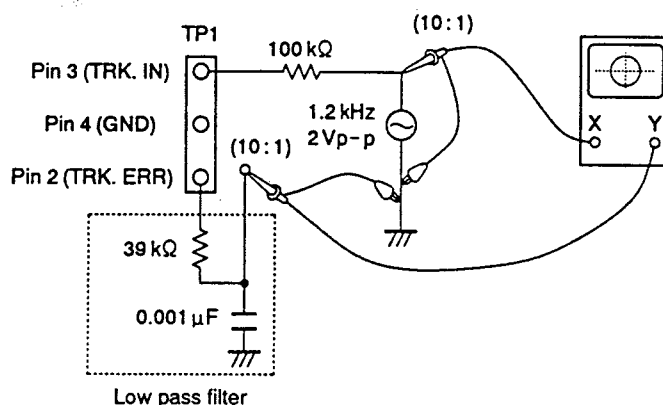
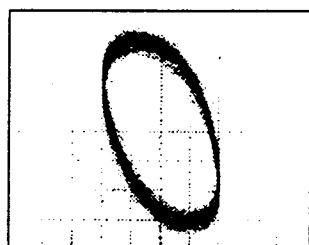
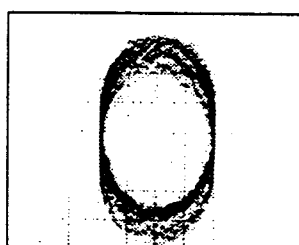


Figure 5

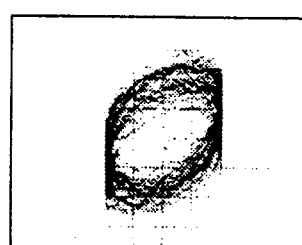
Tracking Gain Adjustment



Higher gain



Optimum gain



Lower gain

8. REGLAGES

8.1 Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de Réglage/Point et Ordre de Vérification

Si les valeurs spécifiées sont impossibles à obtenir, ou si le réglage n'est pas possible d'après les instructions de vérification ou de réglage les étapes 1 à 4, le bloc optique est sans doute défectueux.

Etape	Point	Point d'Essai	Emplacement du Réglage
1	Vérification du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	Aucun
2	Vérification d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	Aucun
3	Réglage d'inclinaison radiale/tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
4	Vérification du niveau RF	TP1, Broche 1 (RF)	Aucun
5	Réglage de gain de boucle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)

● Tableau des abréviations

FCS. ERR	:Erreur de mise au point
TRK. ERR	:Erreur d'alignement
FCS GAN	:Gain de mise au point
TRK GAN	:Gain d'alignement
FCS. IN	:Mise au point correcte
TRK. IN	:Alignement correct

● Instruments de Mesure et Outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS - 7)
4. Résistance (100 k Ω)
5. Outils conventionnels

● Point d'Essai et Positions de Réglage de la Résistance Variable

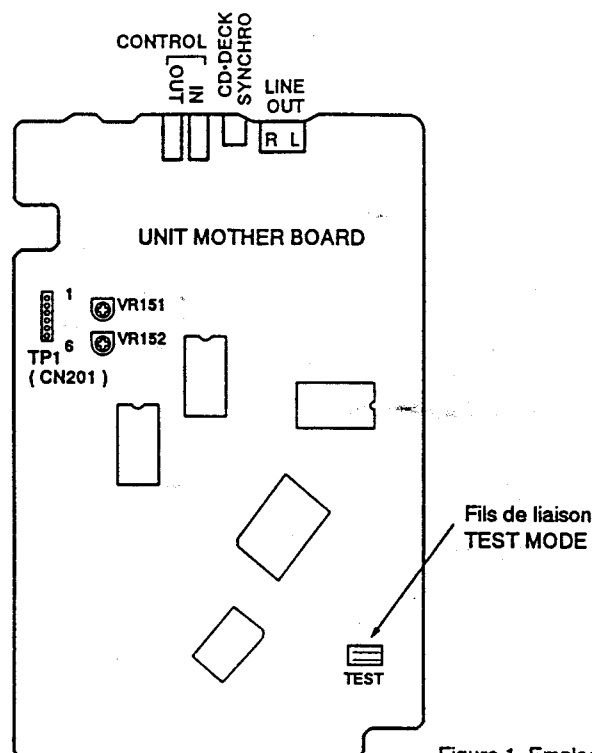


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en Mode d'Essai]

Voici la manière de mettre le modèle en mode d'essai.

1. Débrancher le cordon d'alimentation de la prise secteur.
2. Court-circuiter les fils de liaison du mode d'essai. (Voir Figure 1.)
3. Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
	PGM (PROGRAM)	Fermeture du circuit asservi de la mise au point	<p>La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque.</p> <p>Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible.</p> <p>Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, puis s'abaisse et se soulève trois fois, et enfin revient à sa position de départ.</p>
▷	PLAY	Asservissement de rotation en service	<p>Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée.</p> <p>Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum.</p> <p>Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.</p>
□□	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	<p>Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture.</p> <p>Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste.</p> <p>Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.</p>

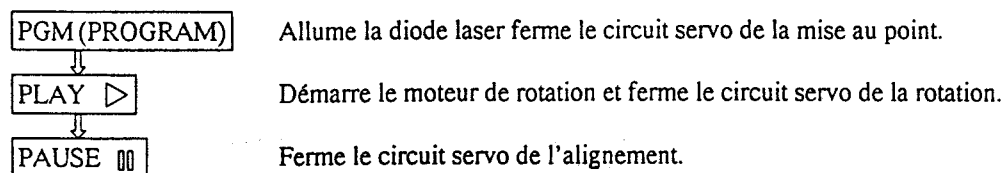
Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
◀◀	MANUAL SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
▶▶	MANUAL SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
□	STOP	Arrêt	Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougent pas lorsque cette touche est enclenchée.
△	EJECT	Ejection du magasin à disques	Rangé le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée.

Remarque : Lors de l'insertion du magasin, le disque 1 est chargé automatiquement.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.

Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.



Attendre 2 à 3 secondes entre chaque opération.

1. Vérification du Décalage de la Mise au Point

● Objectif	Vérifier le décalage CC de l'amplificateur d'erreur de mise au point.		
● Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 5 mV/division 10 ms/division mode CC	● Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
		● Emplacement du réglage	Aucun
		● Disque	Aucun requis
[Marche à suivre] Vérifier que la tension à TP1 broche 6 (FCS. ERR) soit $0 \pm 50 \text{ mV}$.			

Remarque : Si les valeurs spécifiées sont impossibles à obtenir, ou si le réglage n'est pas possible d'après les instructions de vérification ou de réglage les réglage de l'item 1 à 4, le bloc optique est sans doute défectueux.

2. Vérification d'Équilibrage d'Erreur d'Alignement

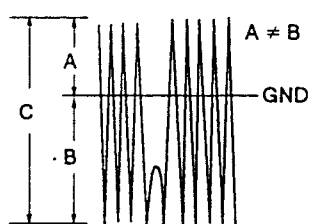
● Objectif	Pour vérifier qu'il n'y a pas de variation de sensibilité dans la photodiode d'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. Aucun YEDS-7

[Marche à suivre]

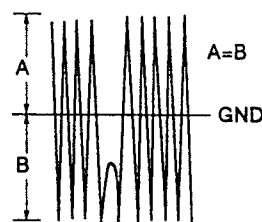
1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. En supposant que l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK ERR) est (A) et que l'amplitude négative est (B), l'expression ci-dessous est satisfaite.

$$A \geq B : \frac{A-B}{C} \times \frac{1}{2} \leq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leq 0.1$$



S'il y a un composant CC



S'il n'y a pas de composant CC

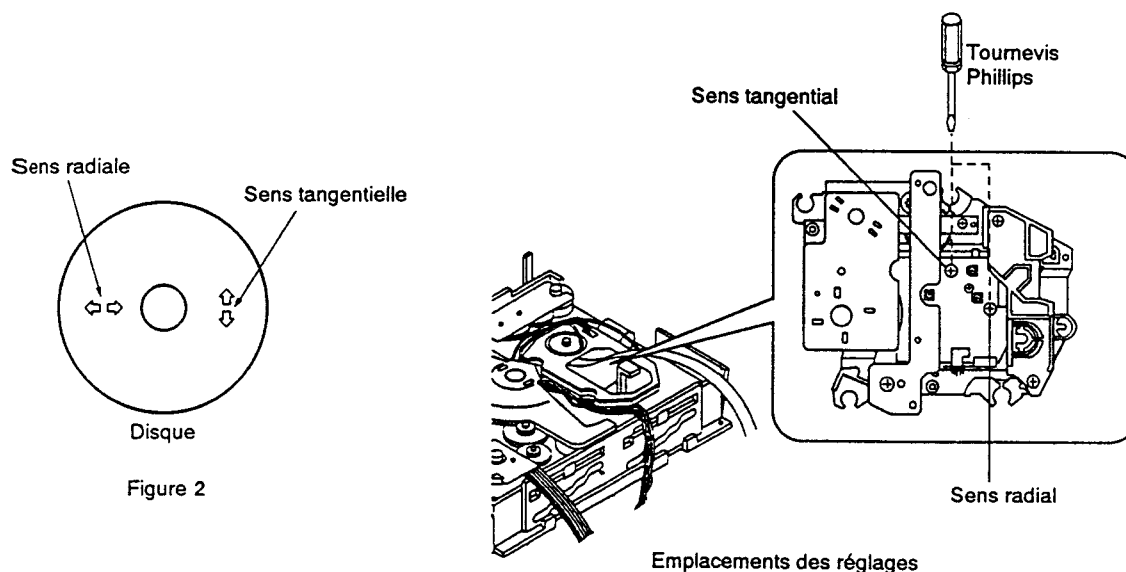
3. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

● Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent vericalement le disque et permettre ainsi la lecture optimum des signaux RF.		
● Symptôme quand déréglé	Son interrompu ; certains disques peuvent être lus et pas d'autres.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle. YEDS-7

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$ pour déplacer le capteur à mi-chemin sur le disque (R=35 mm). Appuyer sur la touche PGM (PROGRAM), PLAY \triangleright et PAUSE $\square\square$ dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 3).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.
5. Lorsque le réglage est terminé, bloquer les vis de réglage radiale et tangentielle.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 2.



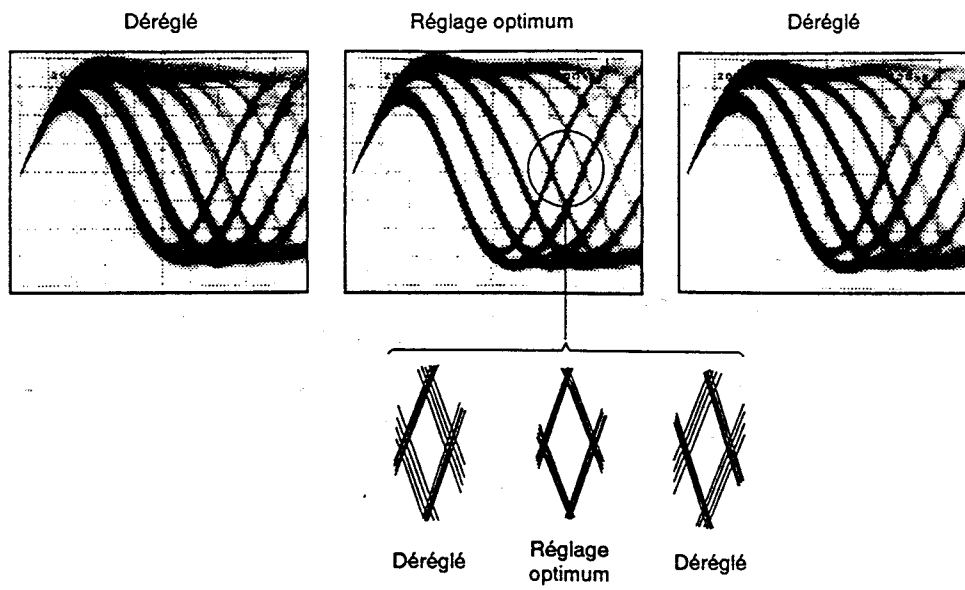


Figure 3 Motif en oeil

4. Vérification du Niveau RF (Niveau RF)

● Objectif	Vérifier de optimiser l'amplitude du signal RF de lecture.		
● Symptôme quand déréglé	Pas de lecture ni de recherche.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF).	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] 50 mV/division 10 ms/division mode CA	● Emplacement du réglage ● Disque	Aucun YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL SEARCH FWD ▷▷ ou la touche REV <<. Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷, puis sur la touche PAUSE ||, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Vérifier de façon que l'amplitude du signal RF atteigne $1,2 V_{c-c} \pm 0,2 V$.

5. Réglage de Gain de Boucle Asservie de la Mise au Point

● Objectif	Pour optimiser le gain de la boucle d'asservissement de la mise au point.		
● Symptôme quand déréglé	La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
● Raccordement des instruments de mesure	Voir Figure 4.	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X-Y	● Emplacement du réglage ● Disque	VR152 (FCS. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD $\triangleright\triangleright$ ou la touche REV $\triangleleft\triangleleft$ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY \triangleright , puis sur la touche PAUSE $\square\square$, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

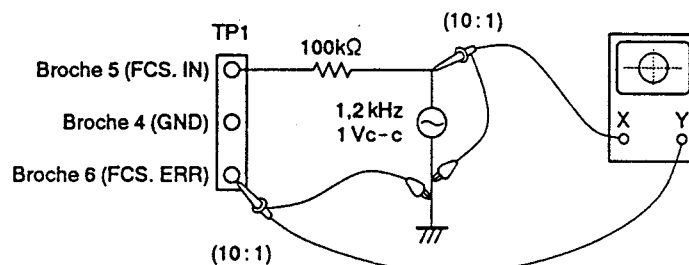
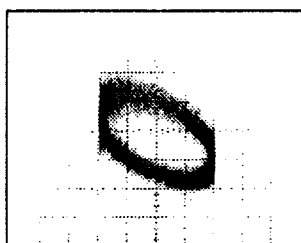
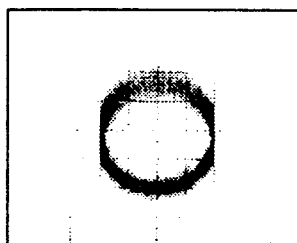


Figure 4

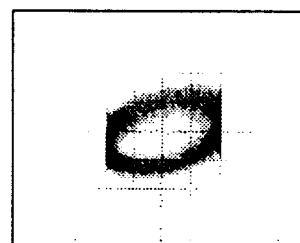
Réglage de gain de mise au point



Gain supérieur



Gain optimum



Gain inférieur

6. Réglage de Gain de Boucle Asservie de l'Alignement

● Objectif	Pour optimiser le gain de la boucle d'asservissement de l'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 5.	● Etat du lecteur	Mode d'essai, lecture
	[Réglages] GAN. 1 GAN. 2 50 mV/division 20 mV/division mode X-Y	● Emplacement du réglage ● Disque	VR151 (TRK. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷, puis sur la touche PAUSE ◻◻, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

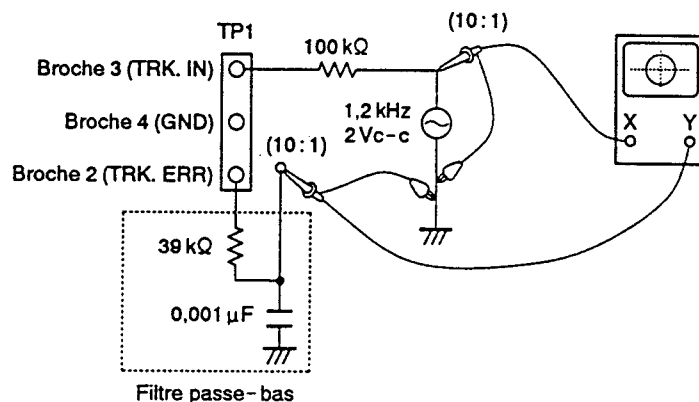
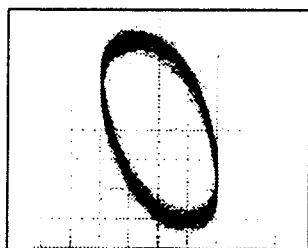
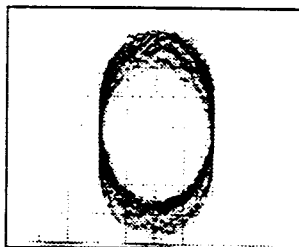


Figure 5

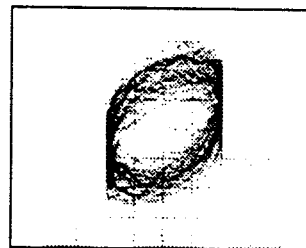
Réglage de gain d'alignement



Gain supérieur



Gain optimum



Gain inférieur

8. AJUSTES

8.1 Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de Ajuste/Verificación y Orden

Si no se puede obtener los valores especificados o no puede realizar el ajuste haciendo los procedimientos escritos los pasos 1 a 4, el bloque del captor será defectuoso.

Paso	Ítem	Punto de Prueba	Lugar de Ajuste
1	Verificación del descentramiento de enfoque	TP1, Patilla 6(FCS. ERR)	Ninguno
2	Verificación del equilibrio de ajuste de seguimiento	TP1, Patilla 2(TRK. ERR)	Ninguno
3	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1 (RF)	Tomillo de ajuste de la inclinación radial. Tomillo de ajuste de la inclinación tangencial
4	Verificación del nivel de RF	TP1, Patilla 1 (RF)	Ninguno
5	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5(FCS. IN) TP1, Patilla 6(FCS. ERR)	VR152(FCS. GAN)
6	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3(TRK. IN) TP1, Patilla 2(TRK. ERR)	VR151 (TRK. GAN)

● Tabla de abreviaturas

FCS. ERR	:Error de enfoque
TRK. ERR	:Error de seguimiento
FCS GAN	:Ganacia de enfoque
TRK GAN	:Ganacia de seguimiento
FCS. IN	:Entrada de enfoque
TRK. IN	:Entrada de seguimiento

● Instrumentos y Herramientas de Medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS- 7)
4. Resistor (100 k Ω)
5. Herramientas estándar

● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

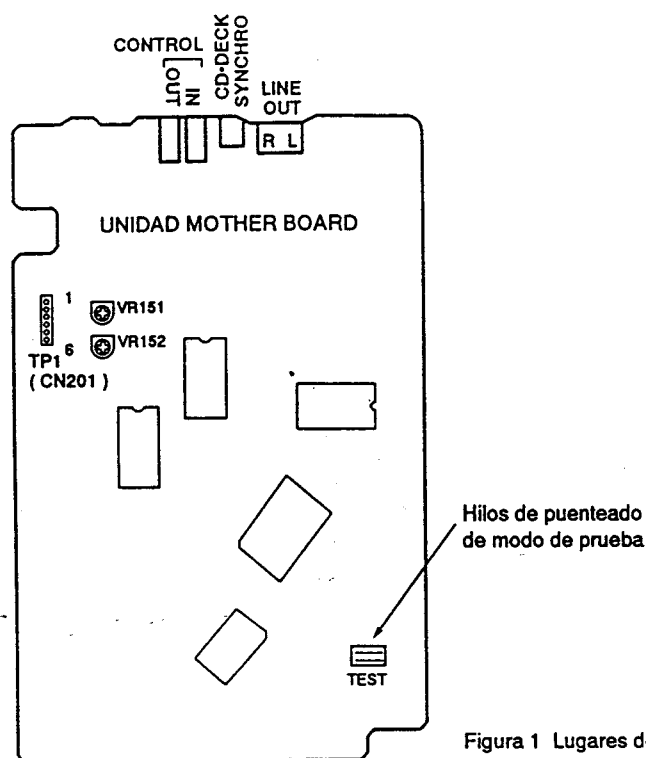


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Desenchufe el cable de alimentación de la toma de CA.
2. Controcircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
	PGM (PROGRAM)	Cierre del servo de enfoque	<p>El diodo láser se encenderá y el actuador de enfoque se eleva, después se descende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoca sobre el disco.</p> <p>Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque.</p> <p>Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá tres veces, y volverá a su posición original.</p>
▷	PLAY	Activación del servo del eje	<p>Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado.</p> <p>Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima.</p> <p>Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz láserico incide en la sección del espejo en la periferia del disco, ocurrirá el mismo síntoma.</p>
□□	PAUSE	Apertura/cierre del servo de seguimiento	<p>Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción.</p> <p>Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo láserico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema.</p> <p>Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.</p>

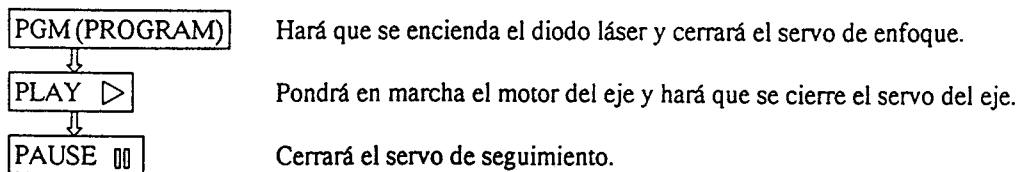
Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
◀◀	MANUAL SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
▶▶	MANUAL SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Inicializa y se para la rotación del disco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
△	EJECT	Expulsión del cargador de discos compactos	Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.

Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.

A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.



Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Verificación del Descentramiento del Enfoque

● Objetivo	Verificación de la tensión de CC para el amplificador de error de enfoque.		
● Síntomas en caso de desajuste	El reproductor no enfoca y la señal de RF contiene perturbaciones.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR)	● Estado del reproductor	Mode de prueba, parado (con el interruptor de alimentación en ON)
	[Ajustes] 5 mV/división 10 ms/división modo de CC	● Lugar de ajuste	Ninguno
		● Disco	No es necesario
[Procedimiento] Verificación de la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de 0 ± 50 mV.			

Nota : Si no se puede obtener los valores especificados o no puede realizar el ajuste haciendo los procedimientos escritos los ajuste del ítem 1 a 4, el bloque del captor será defectuoso.

2. Verificación del Equilibrio de Error de Seguimiento

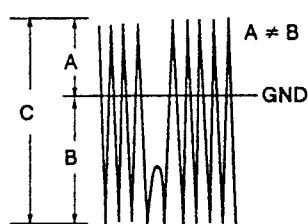
● Objetivo	Para comprobar que no hay variación en la sensibilidad del diodo de la foto de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo	● Estado del reproductor	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto
	[Ajustes] 50 mV/división 5 ms/división modo de CC	● Lugar de ajuste	Ninguno
		● Disco	YEDS-7

[Procedimiento]

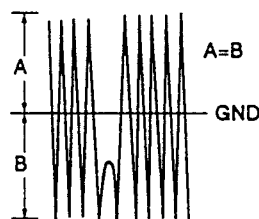
1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▷, por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Compruebe que la expresión siguiente se satisface, suponiendo que la amplitud positiva de la señal de error de seguimiento en TP1, alfiler 2 (TRK ERR) es (A), y la amplitud negativa es (B).

$$A \geq B : \frac{A-B}{C} \times \frac{1}{2} \leq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leq 0.1$$



Cuando hay componente de CC



Cuando no hay componente de CC

3. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces lásericos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
● Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA	● Estado del reproductor	Modo de prueba, reproducción
		● Lugar de ajuste	Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial
		● Disco	YEDS-7

[Procedimiento]

1. Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL SEARCH FWD $\triangleright\triangleright$ o la tecla REV $\triangleleft\triangleleft$ a fin de mover el captor hasta la mitad del disco ($R=35$ mm). Presione la tecla PGM (PROGRAM), la tecla PLAY \triangleright , y después la tecla PAUSE $\square\square$, por este orden, a fin de cerrar los servos respectivos, y ponga el reproductor en el modo de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 3).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.
5. Cuando se completa el ajuste, fije los tornillos para el ajuste radial y tangencial.

Nota: Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 2.

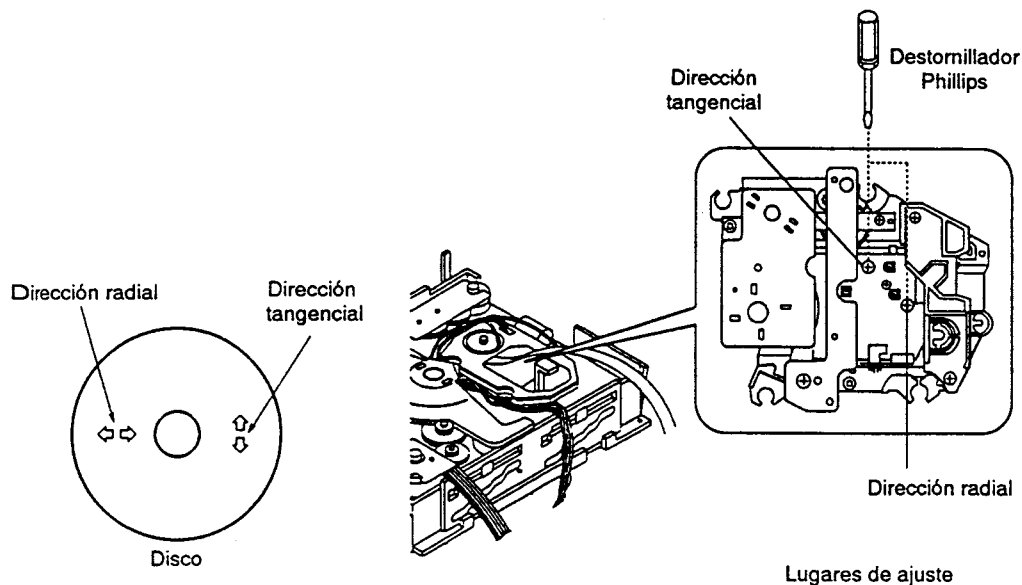


Figura 2

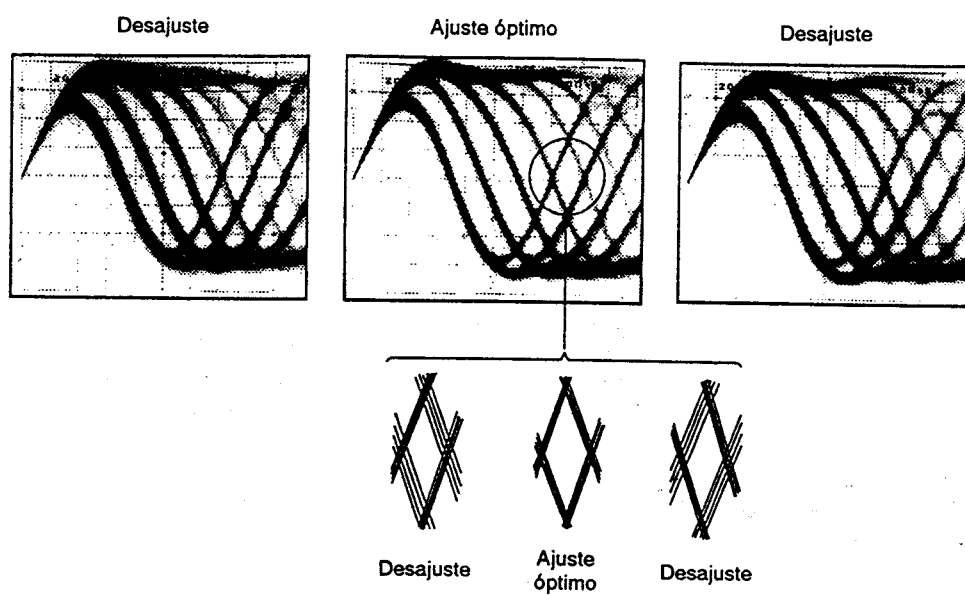


Figura 3 Patron optico

4. Verificación del Nivel de RF

● Objetivo	Verificación de la amplitud de la señal de RF de reproducción.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF).	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] 50 mV/división 10 ms/división modo de CA	● Lugar de ajuste	Ninguno
		● Disco	YEDS-7
<p>[Procedimiento]</p> <ol style="list-style-type: none"> 1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁, presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y después la tecla PAUSE ◻◻, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción. 2. Verificación de la amplitud de la señal de RF sea de $1,2 V_{p-p} \pm 0,2 V$. 			

5. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo	Optimización de la ganancia del bucle del servo de enfoque.		
● Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la figura 4.	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] CH1 CH2 20 mV/división 5mV/división modo X-Y	● Lugar de ajuste	VR152 (FCS. GAN)
		● Disco	YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 V_{p-p}.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y después la tecla PAUSE ◻◻, por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

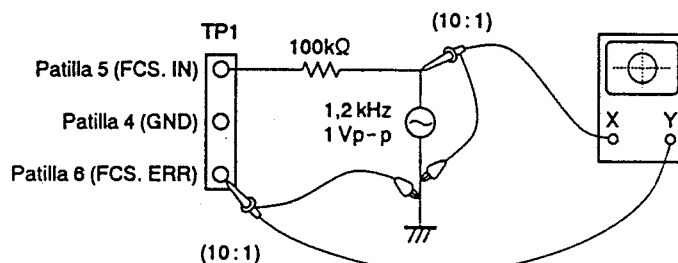
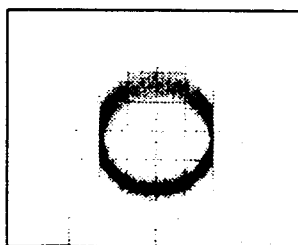


Figura 4

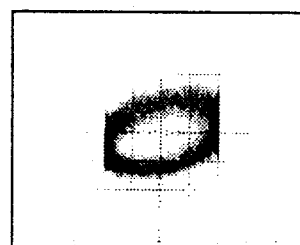
Ajuste de la ganancia de enfoque



Ganancia superior



Ganancia óptima



Ganancia inferior

6. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo	Optimización de la ganancia del bucle del servo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 5.	● Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] CH1 CH2 50 mV/división 20 mV/división modo X-Y	● Lugar de ajuste	VR151(TRK. GAN)
		● Disco	YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla **MANUAL-SEARCH FWD** $\triangleright\triangleright$ o la tecla **REV** $\triangleleft\triangleleft$ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla **PGM (PROGRAM)**, la tecla **PLAY** \triangleright , y la tecla **PAUSE** $\square\square$, por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

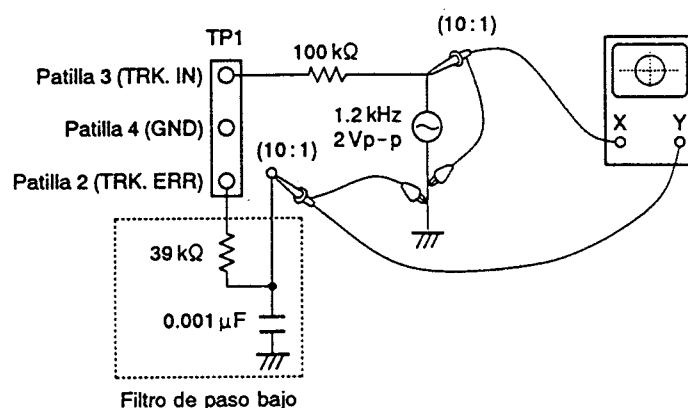
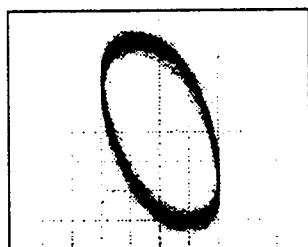
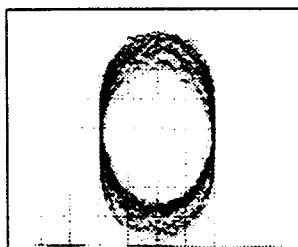


Figura 5

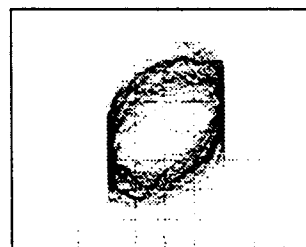
Ajuste de la ganancia de seguimiento



Ganancia superior



Ganancia óptima



Ganancia inferior

9. FOR KC, WEM AND WB TYPES

NOTES:

- Part without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

CONTRAST OF MISCELLANEOUS PARTS

PD - M701 /KC,WEM, WB and PD - M701 /KU have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		KU type	KC type	WEM type	WB type	
Δ	CD Packing case	PHG1787	PHG1828	PHG1828	PHG1828	For packing
	Recycle label	.....	PRW1253	.....	.....
	Strain relief	CM-22	CM-22	CM-22B	CM-22B	
Δ	Display window	PAM1572	PAM1572	PAM1577	PAM1577	
	Connection cord with mini plug	PDE-319	PDE-319	.....	.....
	AC power cord	RDG1010	RDG1010	PDG1003	PDG1036	
	Operating instructions (French)	.....	PRC1049	.....	.....
	Operating instructions (English)	PRB1175	PRB1175	.....	PRB1175	
	Operating instructions (English/French/Dutch/Italian/German /Swedish /Spanish/Portuguese)	.....	.....	PRE1164	.....
Δ	Power transformer (AC120V)	PTT1235	PTT1235	.....	.....
Δ	Power transformer (AC220-240V)	.....	.....	PTT1236	PTT1236	
⊙	Mother board assembly	PWM1588	PWM1588	PWM1589	PWM1589	
⊙	Sub board assembly	PWM1593	PWM1593	PWM1594	PWM1594	
	Headphone board assembly	Non Supply	Non Supply	Non Supply	Non Supply	

◎ MOTHER BOARD ASSEMBLY (PWM1589)

PWM1589 and PWM1588 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		PWM1588	PWM1589	
△ △	C393	CCCSL101J50	.....
	D391 - 394	1SS254	.....
	IC20	TA2019P	M5298P	
	IC31	.....	ICP-N10	
	JA391,392 JACK/12V (CONTROL IN, OUT)	PKN1004	.....
	L391 Axial inductor	LAU010K	.....
	R391	RD1/6PM244J	.....
	R392	RD1/6PM102J	.....

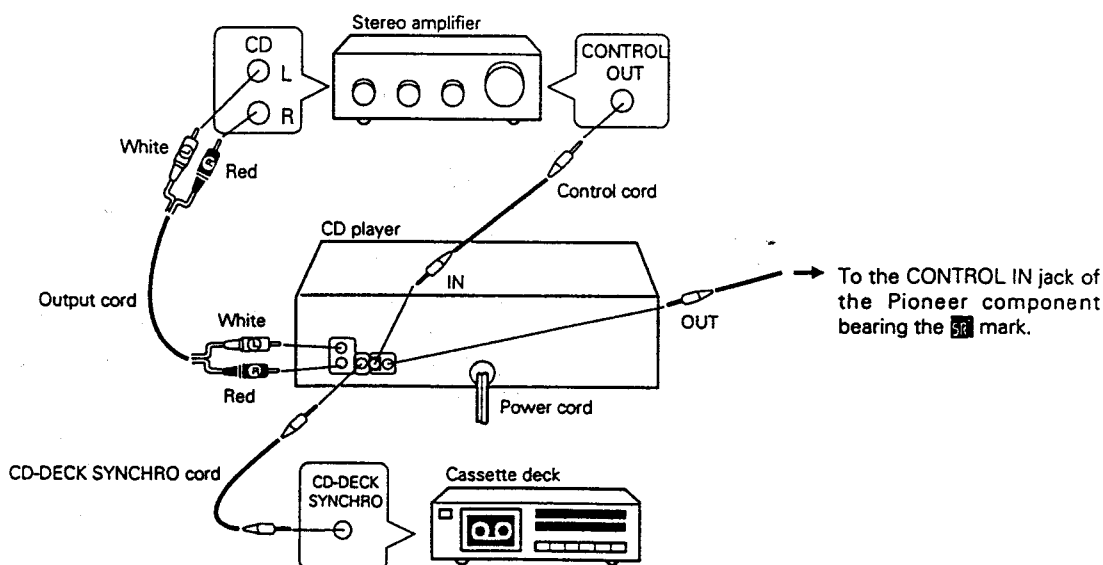
HEADPHONE BOARD ASSEMBLY

Although Headphone board assembly of PD - M701/WEM, WB and Headphone board assembly of PD - M701/KU are different in part number, they have the same service parts.

Headphone board assembly of PD - M701/KC is the same as that of PD - M701/KU.

10. CONNECTIONS

- Make sure that all of the components are turned off before making connections.



Making connections

- 1 Connect the OUTPUT jacks of this unit to the input jacks (CD or AUX) of the amplifier. Make sure that the white plugs are connected to the left (L) jacks and the red plugs to the right (R) jacks.
- Be sure not to connect this unit to the amplifier's PHONO jacks, as sound will be distorted and normal playback will not be possible.
- 2 Connect the power cord to a household AC wall outlet or an AC outlet on your amplifier.
- Make sure plugs are inserted fully into the jacks and wall outlet.

CD-Deck synchro function

If you have a Pioneer cassette deck provided with the CD-Deck synchro function, connect the CD-DECK SYNCHRO jacks of the CD player and cassette deck. With this function, synchro recording can be carried out between player and deck.

- For details on connections and operation, refer to the instruction manual supplied with the cassette deck.
- The CD-DECK SYNCHRO cord is not supplied with the CD player.

System remote control with a Pioneer stereo amplifier that has the SR mark

(Available with U.S., and Canadian models: Not available with models for U.K., Australia and multi-voltage types)

When a Pioneer stereo amplifier bearing the SR mark is used, connect the CONTROL IN jack on the rear panel of the CD player to the CONTROL OUT jack of the amplifier. This will enable the CD player to be controlled using the remote control unit supplied with the stereo amplifier. If you do not plan to use this feature, it is not necessary to connect CONTROL IN/OUT jacks.

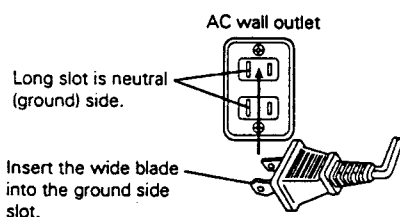
- The control cord is supplied with the CD player.
- The remote control unit supplied with the amplifier can be used to control Play, Stop, Pause, Track/Disc Search and Disc Change operations.
- For instructions regarding connections and operation, refer to the operating instruction manual provided with your stereo amplifier.

NOTES:

- When a control cord is connected to the player's CONTROL IN jack, direct control of the player with the remote control unit is not possible. Operate the player with the remote control unit by aiming it at the amplifier.
- Be sure to connect both of the control cord's plugs securely to the CONTROL IN and CONTROL OUT jacks. Do not connect only one end of the cable.
- Be sure to turn off the power of the amplifier before connecting the power cord and output cord.

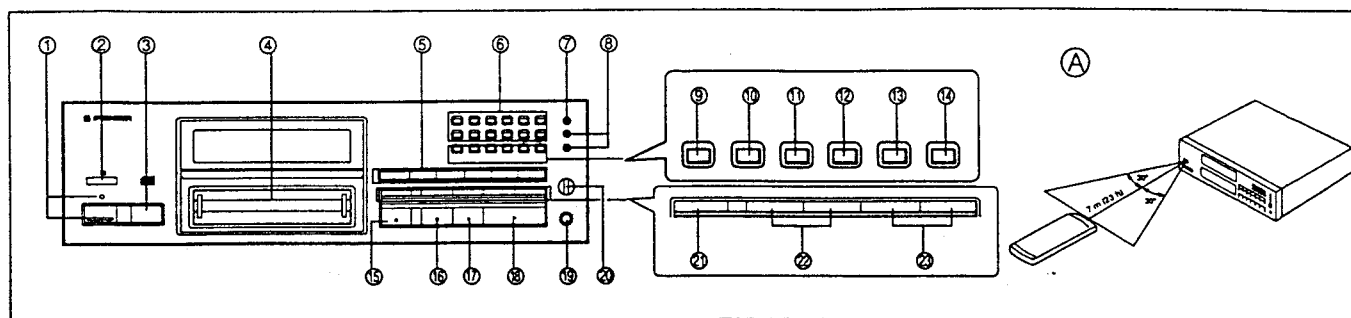
CONNECTING THE POWER CORD

Household electrical outlets are provided with specific polarity, a live side and a neutral (ground) side. This unit utilizes such polarity in order to improve sound quality. As shown in the illustration, be sure to insert the power plug so that its blades match the width of slots in the outlet.



11. PANEL FACILITIES

FRONT PANEL



① **POWER STANDBY/ON switch and indicator**

② **Remote sensor**

Receives the signal from the remote control unit.

③ **ADLC button**

④ **Magazine insertion slot**

⑤ **DISC NUMBER buttons (DISC 1 - DISC 6)**

⑥ **Digit buttons (1-10, +10, ≥ 20)**

⑦ **HI-LITE SCAN button**

⑧ **AUTO FADER buttons (IN/OUT)**

⑨ **TIME button**

⑩ **REPEAT button**

⑪ **PGM button**

⑫ **DELETE button**

⑬ **COMPU PGM EDIT button**

⑭ **TIME FADE EDIT button**

⑮ **EJECT button (▲)**

⑯ **Stop button (■)**

⑰ **Pause button (||)**

⑱ **Play button (▶)**

⑲ **Headphones jack (PHONES)**

⑲ **Headphones volume (PHONES LEVEL)**

⑲ **RANDOM PLAY button**

⑲ **Manual search buttons (◀◀/▶▶)**

⑲ **Track search buttons (◀◀/▶▶)**

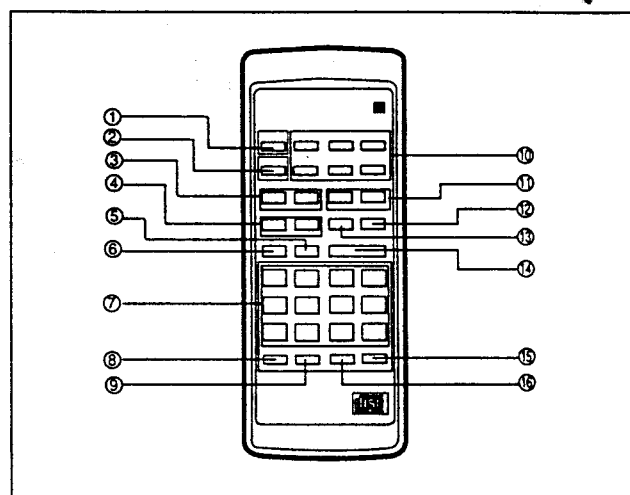
A REMOTE CONTROL OPERATIONS

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

- If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

REMOTE CONTROL UNIT



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① **POWER button**

② **ADLC button**

③ **MANUAL search buttons (◀◀ / ▶▶)**

④ **TRACK search buttons (◀◀ / ▶▶)**

⑤ **PAUSE button (||)**

⑥ **STOP button (■)**

⑦ **Track number/Digit buttons (1-10, +10, ≥ 20)**

⑧ **PGM button**

⑨ **CHECK button**

⑩ **DISC NUMBER buttons (1 - 6)**

⑪ **OUTPUT LEVEL buttons (+/-)**

⑫ **RANDOM PLAY button**

⑬ **HI-LITE SCAN button**

⑭ **PLAY button (▶)**

⑮ **DELETE button**

⑯ **CLEAR button**

12. SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Power requirements	
European models	AC 220 - 230 V, 50/60 Hz
U.K., Australian models	AC 230 - 240 V, 50/60 Hz
U.S., Canadian models	AC 120 V, 60 Hz
Other models	AC 110/120 - 127/220/240V (switchable) 50/60 Hz
Power consumption	
U.S., Canadian models	12 W
Other models	14 W
Operating temperature	+5°C - +35°C (+41°F - +95°F)
Weight	4.0 kg (8 lb, 13oz)
External dimensions	420(W) X 295(D) X 130(H) mm 16-9/16(W) X 11-10/16(D) X 5-2/16(H) in

2. Audio section

Frequency response	2 Hz - 20 kHz
S/N ratio	102 dB or more (EIAJ)
Dynamic range	96 dB or more (EIAJ)
Harmonic distortion	0.003 % or less (EIAJ)
Output voltage	2.0 V
Wow and flutter	less than $\pm 0.001\%$ (W.PEAK) (below measurable level) (EIAJ)
Channels	2-channel (stereo)

3. Output terminal

Audio line output
Headphone jack with volume control
Control input/output jacks (Equipped with U.S. and Canadian models:
Not available with models for military zones (multi-voltage types))
CD-DECK SYNCHRO jack

4. Functions

Number of discs to be stored - maximum 6.

Basic Operation Buttons

- PLAY, PAUSE, STOP

Search Function

- Disc Search
- Track Search
- Manual Search

Programming

- Maximum 32 steps
- Pause
- Program Check/Correction (remote control unit)
- Program Clear (single track or all tracks)
- Delete Play

Repeat Functions

- 1 Track Repeat
- All Discs Repeat
- Program Repeat
- Random Play Repeat
- Delete Play Repeat
- Delete Random Play Repeat
- Magazine Hi-Lite Scan Repeat

Random Play

- Random Play (repeat also available)
- Delete Random Play (repeat also available)

Switching Display

Time consumed, remaining time (track/disc), and total time

Timer Start

ADLC

Automatic Digital Level Controller

Digital Level Controller

Volume control can be done.

One-touch Fade

Fade-in and fade-out possible.

Compu Program Editing

Selects the tracks for both sides of the tape within the specified time.

Time Fade Editing

Selects the tracks within the specified time. Playback stops with a fade-out.

Magazine Hi-Lite Scan

- DISC SCAN
- TRACK SCAN

Power On/Off (remote control unit)

Automatic Power On Function


Power Down Eject Function

5. Accessories

● Remote control unit	1
● Size AAA/R03/dry batteries	2
● Six-compact-disc magazine	1
● Output cord	1
● Control cord	1
(U.S. and Canadian models only: Not available with models for military zones (multi-voltage types))	
● Operating instructions	1

NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs

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